# AMERICAN AVIATION

December 29, 1958



How the Industry Fared in '58 • FAA Contract Roundup

Transport Business—Soviet Style • Lear's Bid for New Markets



# FIAT G 91

— **Designed to NATO's operational Requirements**

— **Research assisted by all the NATO nations**

— **Development fostered by NATO's leading aeronautical scientists and engineers**

— **Flight tested by NATO's leading test pilots**

**The features of the G91 are based on:**

the cockpit, designed for piloting ease and comfort

the landing gear, engineered to operate on short, semi-prepared strips

the armanent, chosen and arranged for greater defensive and offensive power (.50 machine guns, 20 or 30 mm. cannons, bombs, atom bombs, tactical bombs and rockets of different calibers, including guided missiles).

Aircraft unit and operational costs are exceptionally low.

**FIAT · DIVISIONE AVIAZIONE — Corso G. Agnelli 200 - TURIN (Italy)**

# AMERICAN AVIATION

December 29, 1958—Vol. 22, No. 16





**EDITORIAL AND BUSINESS OFFICES**

Lawrence L. Brettner, Circulation Director; George F. Peterson, Research Manager; Fay D. Crowley, Advertising Service Manager; Stephen A. Rynas, Advertising Promotion Manager; 1001 Vermont Ave., N.W., Washington 5, D.C., U.S.A. Phone: Sterling 3-5400. Cable: AMERAV.

**REGIONAL OFFICES**

**New York City:** 17 East 48th St., New York 17, N.Y., Robert Weston and Frederick W. Pratt, regional advertising managers. Phone: Plaza 3-1100. **West Coast:** 8929 Wilshire Boulevard, Beverly Hills, Calif., Fred S. Hunter, manager. Phone: Oleander 5-9161 and Olympia 7-1555. **Canada:** Allin Associates, 12 Richmond Street East, Toronto 1, Ontario. Phone: Empire 4-2001. Allin Associates, 1487 Mountain Street, Suite 4, Montreal, Quebec. **Chicago:** 139 N. Clark St., Chicago 2, Ill. Richard K. Helwig, regional advertising manager. Phone: Central 6-5804. **Detroit:** 201 Stephenson Bldg., Detroit 2, Mich. Phone: Trinity 5-2555. Kenneth J. Wells, regional advertising manager. **Cleveland:** 244 Hanna Bldg., 1422 Euclid Avenue, Cleveland 15, Ohio. Phone: Prospect 1-2420, Donald E. Murray, regional advertising manager. **Florida:** 208 Almeria Ave., Coral Gables, Fla., Richard D. Hager, sales representative. Phone: Highland 4-8326. **Geneva:** American Aviation Publications, 10 Rue Grenus, Geneva, Switzerland. Anthony Vandyk, European director. **London:** The AAP Company, 17 Drayton Road, Boreham Wood, Hertfordshire, England. Phone: ELStree 2688. Cable Address: STEVAIR, London. **Paris:** Jean-Marie Riche, 11 Rue Condorcet, Paris (9e). Phone: TRU 15-39. Cable Address: NEWS-AIR PARIS.

**SUBSCRIPTION RATES**

Single copies—$1.00. For U.S. and Canada—$10.00 for 1 year. Other countries—$15.00 for 1 year. Subscriptions limited to aviation industry personnel.





**CHANGE OF ADDRESS**

Send old address (exactly as it appears on mailing label on your copy of magazine) and new address, including zone number if any to American Aviation, 1001 Vermont Avenue, N.W., Washington 5, D.C. Allow two weeks for change.

**PUBLISHING INFORMATION**

Published every other Monday by American Aviation Publications, Inc., Washington, D.C. Printed at The Telegraph Press, Harrisburg, Pa. Accepted as controlled circulation publication at Washington, D.C. and Harrisburg, Pa.



Hugh ... Day .....Assistant Publisher
James C. Brettman .....Adv. Sales Mgr.
Leonard A. Eiserer .....General Manager

NBP


## SPECIAL FEATURES



## NEWS FEATURES



## AIRPORTS & HELIPORTS



## MATERIALS & EQUIPMENT



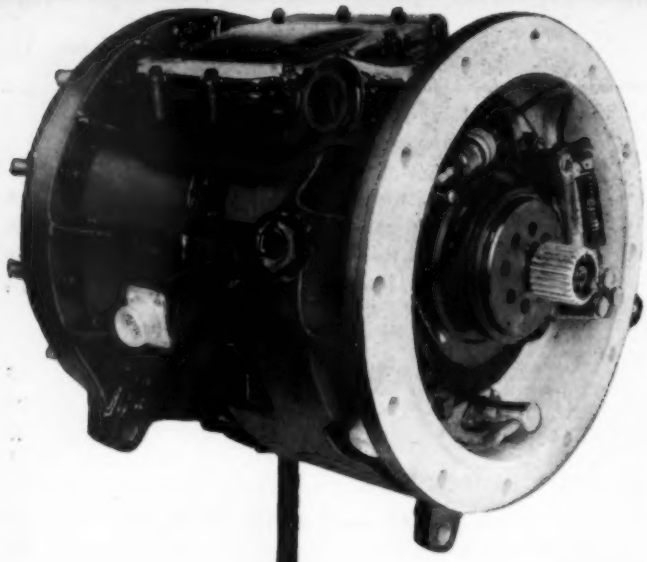
## BUSINESS FLYING



## TRANSPORT AVIATION



## DEPARTMENTS



# Why Convair Chose General Electric Hydraulic Constant Speed Drives for the 880


## 100,000 FLIGHT HOURS HAVE PROVEN INHERENT RELIABILITY OF SIMPLE G-E DESIGN

When the first Convair 880 for Trans World Airlines is flight-tested early in 1959, its four a-c generators will be driven at constant speed by General Electric ball-piston drives. Convair chose these units because of their small size, light weight, high reliability, and ease of maintenance.

**Constant-Frequency A-C System Best Meets Increased 880 Power Demands**

Many of the features of the Convair 880 which make it so attractive to the airline passenger also contribute to a tremendous increase in electric power requirements. Meeting these requirements without prohibitive increases in the weight of electric generating and distribution systems has led to the use of a-c systems. In addition, much of the electronic equipment requires the closely controlled, constant-frequency power provided by General Electric drives.

**G-E Drive Reduces Weight of Airborne Electrical System**

Simple, yet efficient and reliable, the General Electric drive features a unique radial-piston transmission which uses precision steel balls in place of conventional cylindrical pistons, connecting rods, and bearings. There are no eccentric rotating parts and all pressure forces are self-counteractive, thus permitting lightweight construction. The elimination of many moving parts permits rapid tear-down and reassembly, simplifying maintenance and overhaul.

*Manufactured by General Electric's Aircraft Accessory Turbine Department, Lynn, Massachusetts*

**World-Wide Service Organization**

General Electric has in place a complete service organization dedicated to protecting the high standards of usefulness and effectiveness of G-E aviation products. Close co-ordination with this service organization and engine manufacturers, as well as continuing product improvement programs, make possible the high degree of drive reliability so important to the airline operator.

G-E drives come in ratings from 9 to 40 KVA. There is one ideally suited to your aircraft application. If you'd like more information, just fill out and mail the attached coupon or contact your nearest General Electric Aviation and Defense Industries Sales Office.

Section B231-25, General Electric Co.
Schenectady 5, New York
Please send me the following constant-speed-drive bulletins:

- ☐ Descriptive bulletin, GEA-6890
- ☐ Theory of Operation, GET-2480B
- ☐ Immediate Project ☐ Reference Only

NAME_____
POSITION_____
COMPANY_____
CITY_____ STATE_____

*Progress Is Our Most Important Product*

GENERAL ELECTRIC

Circle No. 3 on Reader Service Card.

# Profits: $30 Million—Strikes: $53 Million Plus

To the hundreds of millions of less-favored peoples in other parts of the world who live in awe of The Great American Dream, it would be quite impossible to explain the tragic crisis into which the U.S. air transport industry was thrown in 1958.

Casting aside common sense and reason, the crisis is appalling in terms of pure arithmetic alone.

The Air Transport Association in its year-end report estimated that the trunk carriers will end the year with a net profit of about $30 million on a gross business of $1.5 billion, or about two cents on the dollar.

This is bad enough to start with, but match the puny profits against losses due to strikes and there is no way to rationalize the results.

Up to December 17, here is the record:

Lost Revenues: $53 million (at least)

Lost Wages: $20 million (at least)

Days out on strike: 189

And there were still two more weeks to go before the year's results would be known.

Mandatory arbitration is the only possible solution for public utilities, particularly common carriers.

The wealth of any nation, the very cornerstone of its prosperity, is productive capacity. Stop production and the economy is crippled. Especially in transportation, the lost revenues can never be regained—they're gone for good. It is a strange ideology which believes that standards of living in these days can be improved, and more jobs created, by closing down the economic machinery which generates revenues, wages and jobs.

The cumulative effects of strikes are difficult to calculate. Communities, department stores, gas stations, even the concessions at airports, all suffer. An awful lot of little people, workers, are hurt. In Miami the Eastern strikes cost the Greater Miami area $200,000 a day—$140 a minute.

Through the sluggish progress of civilization, laws have been created to protect individuals and groups and to provide judicial machinery to settle disputes. No one today questions the ultimate authority of the established courts. Only wars and strikes remain in a barbaric state. Wars can be deterred by balanced strengths. Strikes must be replaced by mandatory arbitration where there is some semblance of balance of reason and justice for all.

The jet age is opening on a pretty sorry note and a series of losses and setbacks which can never be overcome. If that is progress, if that is the American Dream, then we are indeed a people of immaturity in today's world.

## Global Positive Control

One of the important achievements of the International Air Transport Association in 1958 was the endorsement of a program for the establishment of positive control of all air traffic moving at high altitudes in the world. This is a much-needed forward step.

Thanks to the leadership of one of the ablest operating men in the business, Captain J. W. G. James, director of flight operations and communications for British European Airways, the IATA technical committee met the air traffic crisis head-on during the year. As chairman of the committee, Captain James carried the program through to complete endorsement by the parent body. Credit also goes to Stan Krzyczkowski, IATA's technical director.

In a major sense, the IATA technical committee proposes to extend throughout the world the same type of concept adopted in the United States in the past year—a single control over high altitude traffic especially in key areas. Captain James has been particularly active in furthering a traffic control program for Europe. His leadership is very much needed during the launching of the jet era.

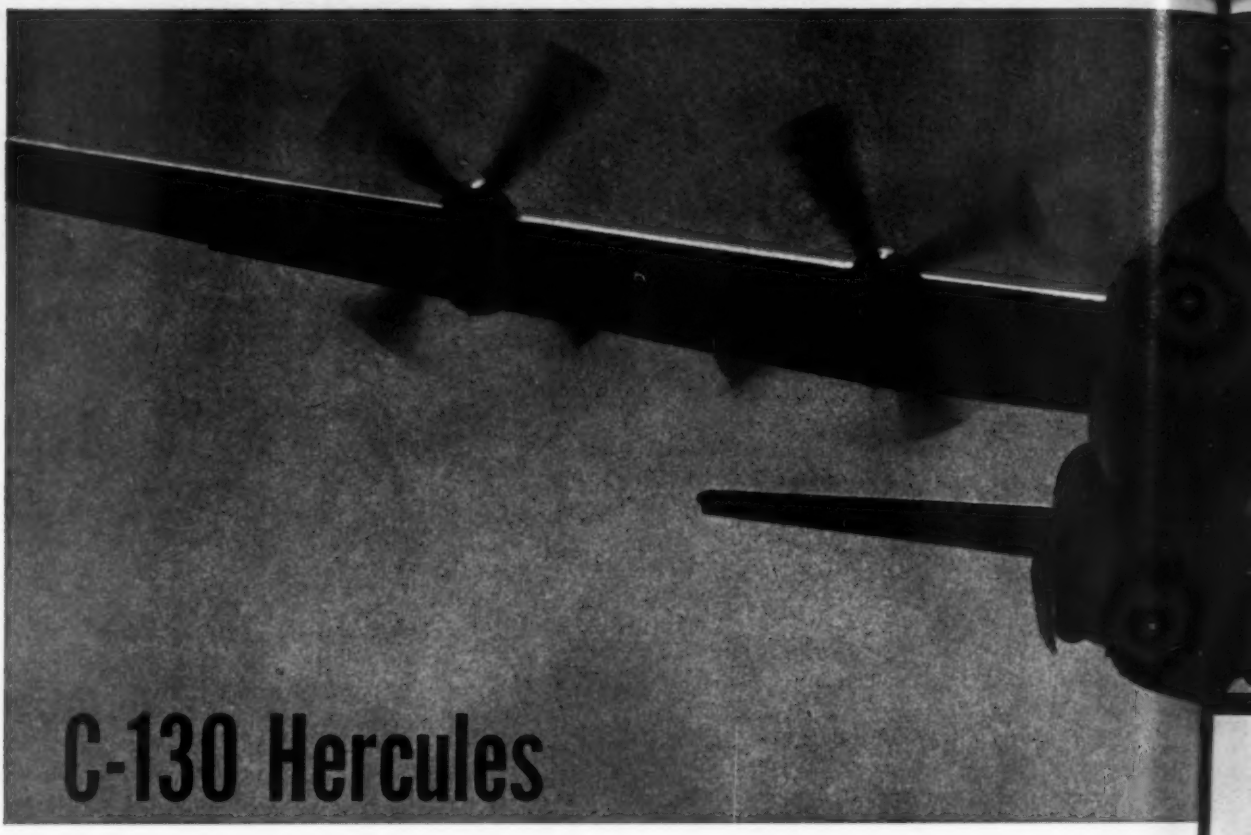
## FAA Makes Debut

On January 1 a new chapter in civil aviation begins. The 20-year-old CAA goes out of existence and the new Federal Aviation Agency takes over.

But unless there is a lot of last-minute speed, FAA is coming into existence with a lot of blank spots in upper-echelon management. Strangely enough, there has been no headlong rush of applicants for some of the top positions. There is as yet no clear-cut picture of what FAA is going to look like and how efficiently it is likely to function.

The significance of FAA's debut, then, is more historical at this point than anything else. How it starts functioning is going to require close scrutiny.

Wayne W. Parrish



# C-130 Hercules

## proven champion of U. S. Strategic Airlift

**92 battle-ready troops** can be flown in the C-130 HERCULES from U.S. bases to any trouble spot on earth—all the way, with no change of planes—in 24 hours or less.

Powered by 4 Allison Prop-jets, the HERCULES can land on or take off from short, rough fields, sand, snow and ice—a capability demonstrated dramatically in 2 years of world-wide USAF service.

Designed specifically for transport of troops, supplies, and supporting equipment, the C-130's crew and cargo compartments are air-conditioned and fully pressurized.

20 tons of pallet-loaded cargo can be winched in or out of the HERCULES *in only 40 seconds*—cutting normal loading/unloading time from 3 hours to 15 minutes or less.

The HERCULES' huge hydraulically-controlled 9-foot by 10-foot aft cargo door and mammoth cargo capacity will accommodate big missiles and ground support equipment.

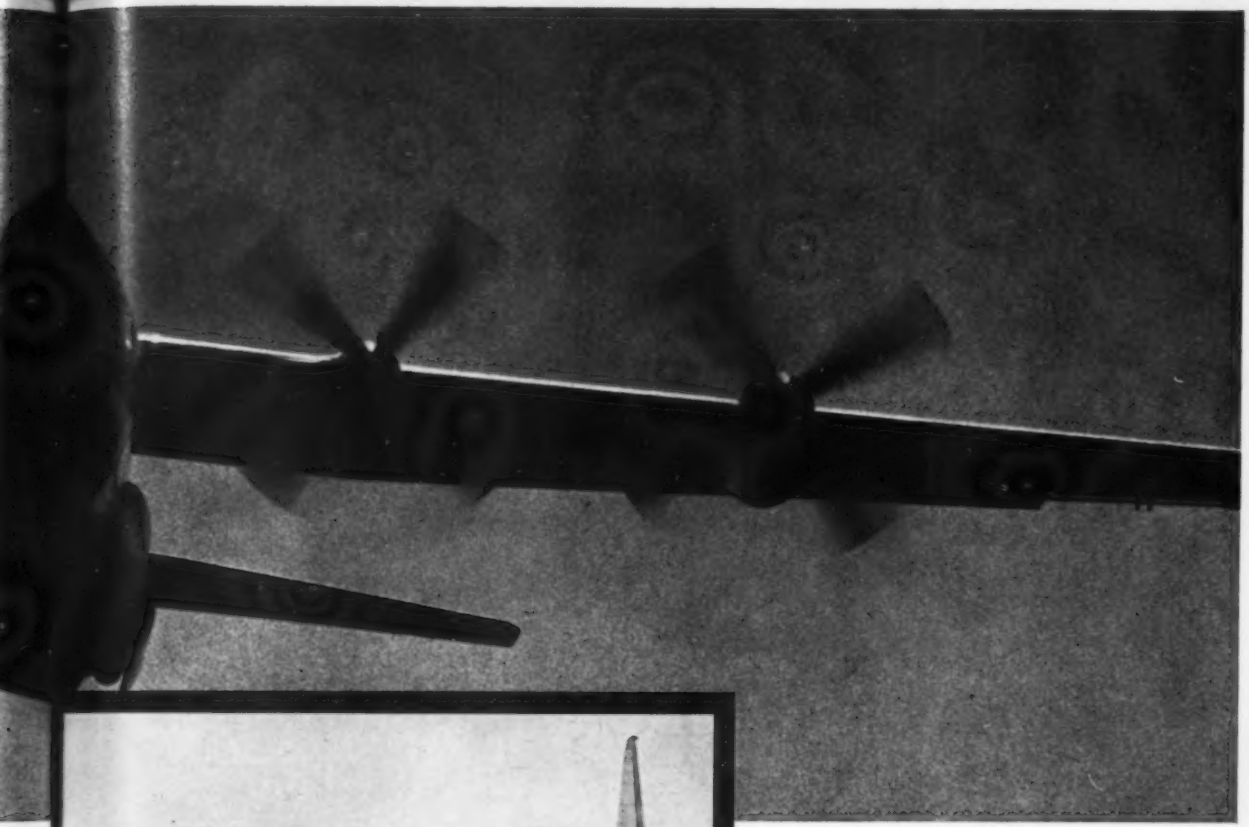
62-tons big, 6-miles-a-minute fast, the HERCULES cruises at altitudes above the weather to deliver cargo or troops to airheads over 3400 nautical miles away.

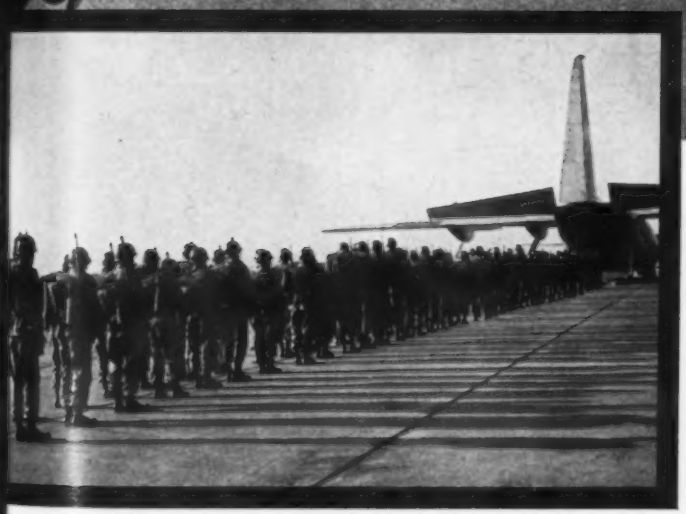
Recent events of world-wide importance have emphasized the unmatched strategic airlift capability of the Lockheed C-130 HERCULES. No other aircraft can do so many personnel/cargo hauling jobs so well, so fast, so economically. Now being produced in the world's largest aircraft plant under one roof, the HERCULES can readily be manufactured in accelerated quantities to meet the needs of our Armed Forces and give U.S. taxpayers more airlift per dollar.

**LOCKHEED *means leadership***

Lockheed Aircraft Corporation, GEORGIA DIVISION, Marietta, Georgia

PROP-JET TROOP TRANSPORTS/AIR FREIGHTERS • JET UTILITY TRAINERS/TRANSPORTS • NUCLEAR-POWERED AIRCRAFT • NUCLEAR PRODUCTS
AIRCRAFT MODERNIZATION/MODIFICATION • GROUND HANDLING EQUIPMENT • MISSILE SUPPORT EQUIPMENT



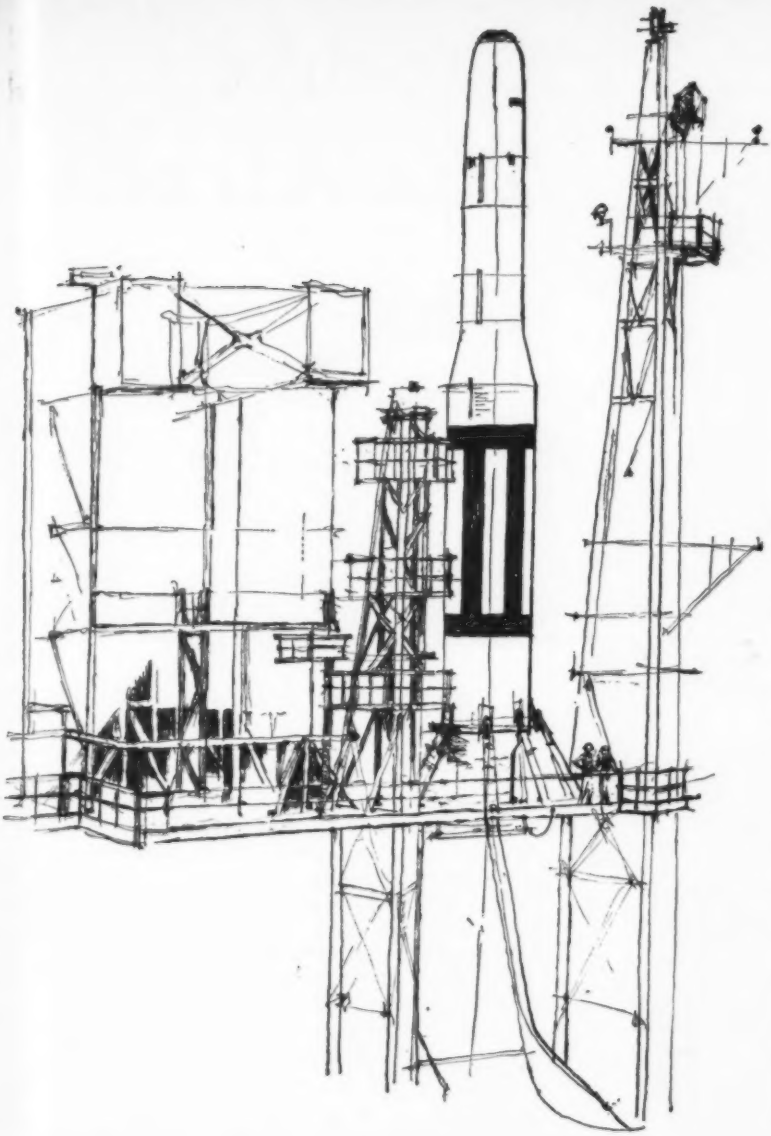


**During 11 days of the Middle East** crisis 100 C-130s were the backbone of a 200-plane aerial armada that transported over 5,000 troops and 8 million pounds of cargo to the trouble zone.

**The C-130 HERCULES** can carry 90% of all known missiles in operational use today. It flies missile cargoes, support equipment, and personnel 3,400 nautical miles non-stop to launching sites.

Circle No. 4 on Reader Service Card.

There is nothing else like this under the sun. It is the Martin-Denver facility, birthplace of the Air Force TITAN. It is also this country's most advanced and fully integrated big-missile development center. Here, our most formidable weapon systems of tomorrow are being designed, built and tested—from the smallest component to the total system—within a single 7,000 acre complex. Every top military and scientific expert who has seen Martin-Denver from *within*, considers it one of our most valuable national resources.





## BUSINESS

### Contract to Watch

Contract to McDonnell Aircraft Company for production of the Navy's F4H-1, supersonic all-weather interceptor. The plane, the winner of a hard competition with the Chance Vought F8U-3, is a two-place, two-engine aircraft capable of speeds in excess of 1320 miles per hour. Cost of original contract for 23 aircraft has been estimated at $7.4 million per plane. Engines are J79 General Electric turbojets.

### Airborne Electronics:

**Radio Corp. of America,** Camden, N.J.—$20,445,677 AMC contract for modification and replacement of ARC-21 through ARC-65 equipment on various aircraft.

**Hoffman Electronics Corp.**—$33 million AMC contract for TACAN air navigation equipment.

**General Electric Co.,** Erie, Pa.—$1,496,211 AMC for ac/dc systems for Convair F-106 aircraft.

### Aircraft:

**Northrop Aircraft, Inc.**—$16,926,000 Air Force contract for T-38A aircraft.

### Aircraft Components:

**Boeing Airplane Co.,** Seattle, Wash.—Undisclosed North American Aviation contract for production of a wing for the B-70 prototype chemical bomber.

**Boeing Airplane Co.,** Wichita, Kan.—$15 million AMC letter contract on account of a $120 million contract for B-52 aircraft parts and spares.

**U. S. Rubber Co.**—$1,768,564 AMC contract for 56 x 16 ice-grip tubeless tires, spares for B-52C and D aircraft.

**Hayes Aircraft Corp.**—6 million McDonnell Aircraft Corp. contract for components for the MG-13 fuel control system for F-101B aircraft.

### Aircraft Instruments:

**Bendix Aviation Corp.**—$2,481,795 AMC contract for airspeed indicators and amplifiers.

### Aircraft Systems:

**Hamilton Standard Div.** of United Aircraft Corp.—Undisclosed North American Aviation contracts to develop air conditioning and pressurization equipment for both the B-70 bomber and F-108 interceptor.

**Summers Gyroscope Co.**—$1½ million Beech Aircraft Corp. contract for a quantity of flight control systems for use in KDB-1 target aircraft.

### Engines:

**General Motors Corp.** Allison Div., Indianapolis, Ind.—$1,468,480 Air Force contract for T56-A-7 turboprop engines for C-130B aircraft for Marine Corps use.

**General Electric Co.,** Aircraft Gas Turbine Div.,—$11,735,858 Air Force contract for product improvement on the J79 engine and $2,312,899 contract for tooling to increase production rate of J79 engines to 50 per month.

### Ground Equipment:

**Boeing Airplane Co.,** Wichita, Kan.— $385,000 AMC contract resulting from a contract for $1.2 million for B-52 MTU/M mobile trainers.

### Helicopters:

**Sikorsky Aircraft Div.,** United Aircraft Corp., Stratford, Conn.—$17 million for production of HSS-2 twin-turbine antisubmarine helicopters for U.S. Navy.

### Maintenance and Overhaul:

**Aircraft Engineering & Maintenance Co.**— Approx. $800,000 AMC contract for technical order changes on 583 Lockheed T-33 aircraft.

### Propellers:

**Curtiss-Wright Corp.,** Propeller Div., Caldwell, N.J.—$3,051,747 Air Force contract for propeller assemblies and components for C-133B aircraft, spare parts and data.

# Catching The Airbus?

## Turbo-prop comfort at 2d. a mile— and carry your car, sir!

The A.W. 671 Airbus, a variant of the A.W. Argosy freightercoach, will be able to operate over stage lengths of about 200 miles at a direct cost of under 2d. a seat mile. This should greatly ease the economics of operating on ultra-short routes—the routes on which, at present, most operators find it difficult to make any profit at all.

A double decker carrying 126 passengers—30 upstairs 96 down—the Armstrong Whitworth Airbus heralds an era when short-distance air services may run like coaches and trains—regularly every hour.

The Airbus has the same basic fuselage as the A.W. 670 Air Ferry which carries 6 cars on the lower deck and 30 passengers above. Operators whose car ferry traffic is purely seasonal will find it easy to convert Air Ferry to Airbus and vice versa. The spacious hold of this aircraft can, of course, be used for general freighting.

These two variants illustrate the care which Armstrong Whitworth, in planning the A.W. Argosy series, have taken to offer operators maximum flexibility.



**Sir W. G. Armstrong Whitworth Aircraft Ltd.**
Baginton, Coventry, England
MEMBER OF HAWKER SIDDELEY AVIATION DIVISION

MAKE THE SHORTEST ROUTES PAY WITH THE A.W. AIRBUS/AIR FERRY

**Long-range, all-weather interceptors may get more U.S. attention.** The reasons: Economics and the fact that Canada wants to use aircraft to destroy the enemy as far away from home as possible. They are definitely not interested in short-range air defense missiles operating from the nearby perimeter of cities and population centers.

**Is the single-place military aircraft on the way out?** Could be. Depends on how far you want to interpret Navy's decision to buy F4H-1 rather than the F8U-3. Purchase was made largely on the basis that the McDonnell aircraft carries both pilot and radar operator rather than asking pilot to be one-man weapons system. Safety factor of two engines contributed.

**Present AF plans call for purchase of 40 more B-58s** as part of fiscal 1960 program. But this could change without notice. Depends on the hack-and-slash process that the budget could undergo as the totals are added up.

**Chances are that both the B-70 and the F-108 will be pushed.** Theory is that much of the development work is common to both aircraft. If one were cut off, work would have to be done anyway —at an astronomical cost.

**Accrued expenditures budgeting is not likely to hit the Armed Forces this year.** However, spending targets will be tight and will become, in many cases, ceilings because the Budget Bureau and the Office of Secretary of Defense has control of the apportionment of funds for the services and for specific programs. Services can't spend money that isn't released.

**Congress may take a dim view of Army plans to let two-year maintenance contracts** under SCAMP (Standard Configuration and Modification Program). Point is that Army has authority to place only one-year contracts for maintenance and service. Second year is, at best, only an option.

**Army helicopters will be a victim of the economy wave.** Specifically, Army's Chinook, 3-ton cargo helicopter, is likely to gather dust for some time because of lack of money.

**Pentagon ain't happy with the current version of the procurement reform bill.** The author, Senator Saltonstall (R. Mass.), will try to iron out all major differences with the Administration before the bill is reintroduced in Congress early in the new session.

**McElroy may be lighting a fuse trying to sell the importance of ARPA** to Congress. The Defense Secretary's pitch is that the Advanced Research Projects Agency, in its own way, is on the same level as the Army, Navy, Air Force and Marine Corps.

**Materials could be the big bottleneck in development of new aircraft.** The day is foreseen when the designer may have to ask the metallurgist what he can make, since the aircraft of the future are likely to be a composite of many, now considered exotic materials.

**Only chance for a nuclear-powered prototype for CAMAL** rests with the Congress. But money won't be provided for even the current modest program. The result: The only work that can be counted on is in the powerplant area.

**Watch for early 1959 news break on Avro Canada's success in "flying saucer"** project being administered by USAF with Army funds. According to one unofficial commentary, Avro engineers feel they could "fly a brick" after saucer experiences.

**Effective expenditure limitations will continue in 1959,** with contractors being forced to make much larger investments of capital in their cost-plus, fixed-fee contracts.

**Diversification could well be the key to survival, AIA indicates,** pointing out that airframe manufacturers are taking on major chores in fields of propulsion, guidance and atomic energy, as military aircraft sales are reduced.

**Manufacturers say they can't win under current conditions.** If they cut development leadtime sharply, increased spending for finished articles of hardware will force program stretchouts or cutbacks under expenditure controls. If they don't cut leadtime, they are blamed for the serious lag in weapon development as compared with Soviet Russia.

**Sign of the times:** A group of 150 Canadair engineers has been assigned at the Boeing plant in Seattle as the "team" approach gets more and more popular in military contracting.

**Manufacturers are asking how much control** of their subcontractor structures will be given to the prime weapon system manager now that the Air Force has approved a new "make-or-buy" policy.

**Key to life of KC-135, Boeing Stratotanker** is the number of B-58s and other big aircraft the Defense Department buys. Boeing is now producing at the rate of 15 a month on total announced orders of 345. More than 200 have already been produced.

**Shortage of avionics specialists** is making some companies wish they could take the radios and other electronic gear off aircraft, although the signs all point to increased use of such equipment.

**Pratt & Whitney will play a big role in developing an aircraft nuclear powerplant.** P&W's part of the project will be to get the highest thrust-to-weight ratio possible by reducing the amount of radiation and shielding or increasing possible speeds and altitudes.

**Lockheed may give twin-engine JetStar buyers a chance to retrofit** with four engine power packs at cost. This could be done at any time after initial purchase; however, in taking back the two original engines, Lockheed would expect an allowance for the time engines were used.

**Bell Aircraft's automatic landing system could promise major improvement** in landing all aircraft under Instrument Flight Rule. System is now being evaluated for use on the B-47.

**Pratt & Whitney's JT-12 is likely to benefit from difficulties** with Fairchild's J83 and GE's J85. A contract for the company's little jet is expected.

**Excess manufacturing facilities will be a major headache** for both the military and industry in the next session of Congress.

**Aircraft Industry sales are likely to be well over $10 billion in 1959** despite a declining market for military aircraft. High level of sales of turbine-powered commercial transports, and a continuing high market for business and military aircraft are expected.

**Large part of aircraft industry contracts with the military will be for R&D.** Few lengthy production runs are in sight in the year ahead.

**Look for demands to increase fees on R&D contracts** as a means of stabilizing earnings of the industry.

## LETTERS

### United Had No. 2

I noticed on page 51 of the December 1 issue of AMERICAN AVIATION a DC-8 with Northwest Airlines' markings. According to the caption this is the first DC-8 to show airline markings. Solely in the interest of keeping the record straight, the number two DC-8 to roll off the Douglas line last August bore United's markings and I can assure you the enclosed photograph (above) contains no artist's retouching.

*R. C. Turner, Regional Affairs Representative, United Air Lines, Washington, D.C.*

### "Without" Not "With"

In reading the November 17 issue of AMERICAN AVIATION, we noted a typographical error on page 22 which presents an untrue picture of B-52G static tests now in progress at Wichita.

The caption pertaining to tests on the new missile platform bomber reads "wings have been deflected upward 24 feet from the jig position and down nine feet *with* serious strain." The word "with" should have been "without" for the airplane actually is giving an excellent account of itself in the torture tests.

*Jack L. Wecker, Chief, News Bureau Wichita Division, Boeing Airplane Co.*

EDITOR'S NOTE: Our apologies, the error was typographical and, once made, an elusive one.

### Jet Airport Problems

Your Personal View "Things Won't Be the Same in 1962" (A/A Sept. 22, p. 7) is the finest editorial written on the Jet Age. You have, as in the past, encompassed the many facets of the problems before us on one short page. While there appears to be no known panacea in the immediate future, your views have supplied the many ingredients that must be placed in the industry mortar. The alarming fact remains, however, that the hands that use the pestle will be responsible for the many successes or failures alike by '62.

*Vernon A. Taylor Seaboard & Western Airlines, New York International Airport, Jamaica, L.I., N.Y.*

•

I must write to you in praise of "Things Won't Be the Same in 1962." My views are those of a most interested spectator, but of an "outsider."

I am particularly struck by your last few paragraphs regarding management talent and the sales departments. I have had some eight years sales and sales management experience in another field, and I know a little whereof I speak.

The airline industry in particular seems to lack the challenging future that one would expect from a supposedly dynamic industry. The pay and promotion potentials both leave much to be desired, especially in the sales and sales management lines. And yet, as I look around me, I find what I believe to be a rather mediocre job of selling aviation to the public.

This is even more graphically true in the field of business, executive and private flying. How much selling of an aircraft, or of flying lessons, is ever done without the prospective customer showing interest and actually taking the first step? And even then, how much selling is ever done?

More power to you in your efforts to sell aviation within the industry, and its need to sell itself to America.

*Leo Boyle, Portland, Me.*

•

### Credit Where Due

In the November 3 issue of AMERICAN AVIATION (p. 42), the company supplying lightweight fasteners for the Boeing 707 should have been listed as the Kaynar Mfg. Co., Inc.

### When & Where

**JANUARY**

Jan. 12-16—SAE, annual meeting and engineering display, Sheraton Cadillac and Hotel Statler, Detroit.
Jan. 18-20—Helicopter Society of America, annual convention, San Mateo, Calif.
Jan. 26-29—IAS, 27th annual meeting, Sheraton Astor, New York City. Honors Night dinner, January 27.

**MARCH**

Mar. 5-6—IAS, flight propulsion meeting (classified), Hotel Carter, Cleveland.
Mar. 8-11—ASME, engineering meeting on "The Turbine in Action," sponsored by the Gas Turbine Division, General Electric Co., Cincinnati, Ohio.
Mar. 31-Apr. 3—SAE, national aeronautic meeting, aeronautic production forum and aircraft engineering display, New York City.

**APRIL**

Apr. 12-19—Air Line Pilots Association, annual air safety forum, Las Vegas.
Apr. 17-18—Third National Conference on Aviation Education, Riverside, Calif.
Apr. 26-30—Airport Operators Council, 12th annual meeting, Portland, Ore.

## BOOKS

### Infrared Physics

*Principles of Infrared Physics. Hayes Aircraft Corp., Birmingham, Ala. 87 pp. Price, $1.50.*

A valuable reference manual for the physics student and persons interested in infrared theory and application. Contains charts, diagrams, and step by step derivation of basic equations.

### Barnstormer's Bible

*Aircraft Maintenance. By Daniel J. Brimm and H. Edward Boggess. Published by Pitman Publishing Corp., New York. 468 pp. Price $5.50.*

Designed as a basic text for student mechanics, this book is a primer for CAA Certificate Examinations. It has, in earlier editions, served as the leading source of this nature for over twenty years.

In it are the essentials of simple dynamic equations, as well as the rudiments of descriptive geometry, blueprint reading, and stress definitions.

It covers every aspect of the maintenance field. Also, how to build a wing rib, use aircraft glue and clamps, handle wood screws, repair floats and hulls on seaplanes, cover airplanes with fabric, and splice piano wire.

The book is in five parts ranging from aircraft woodwork to aircraft hydraulics.

If outmoded, the book is nonetheless a sound reference, valuable to persons responsible for a variety of light aircraft.

In summary: Barnstormers' bible.

### Rotary-Wing Roundup

*The Helicopter. By Jacob Shapiro. Macmillan, New York. 269 pp. Price, $4.50.*

This book accomplishes the unusual: It explains technical material in a manner readable by both those familiar with and those innocent of engineering principles.

The book covers the history of the rotary-wing, typical design characteristics and examples of theory as applied to specific aircraft.

Only shortcoming of this otherwise fine work is a rather glaring tendency to overlook some of the more obvious imperfections of today's helicopter.


# New B. F. Goodrich Liquid-Cooled Brake solves aviation's hot landing problem

HERE'S a revolutionary new braking system developed by B. F. Goodrich that absorbs millions of foot-pounds of energy—yet stays cool enough to touch. This is the first and only proved Liquid-Cooled braking system designed specifically to handle the higher energy conditions of jet aircraft today and in the future.

In the B. F. Goodrich Liquid-Cooled Brake, a coolant fluid circulates behind the friction surfaces, absorbs heat and carries it to a heat exchanger where it is safely dissipated at low temperatures. Excessive heat build-up within the wheel and brake area is eliminated. Friction surfaces maintain their normal stopping characteristics at all times.

During recent flight tests on the Boeing 707 prototype, including repeated taxi tests and power drag, the B.F.Goodrich Liquid-Cooled Brake operated consistently at maximum temperatures well below 500° F—compared with 1500-2000° F for conventional brakes. No cool-off periods were necessary. Even after a stop where maximum braking was applied for highest rate of deceleration, crew members were able to rest their hands on the brakes without discomfort. The brakes were exceptionally smooth and positive—no fade, no noise, chatter or sparks.

B. F. Goodrich engineers are ready to work with you in designing the new Liquid-Cooled Brake system into your high-performance aircraft—without a weight penalty. Write B. F. Goodrich Aviation Products, a division of The B. F. Goodrich Company, Troy, Ohio.

**B.F.Goodrich aviation products**



Circle No. 7 on Reader Service Card.

# Strikes, Slump, CAB Hurt Profits

By Joseph S. Murphy
Executive Editor

A three-pronged assault on the health of the U.S. air transport industry exhibited its impact in the form of financial battlescars last week as airlines were winding up one of the most trying 12 months in their operating history.

The three forces—CAB, labor and recession—combined to hold domestic trunkline profits to about $30 million, up only $3 million over a disappointing $27 million net for 1957 and about half the earnings for 1956.

Despite a threefold increase in business over 1950, profits shrunk to the level of eight years ago.

These were the hard and cold statistics issued by Air Transport Assn. in a year-end estimate of 1958 performance.

"Clearly, the industry cannot long survive—let alone finance the multi-billion dollar jet age—on a profit margin as narrow as this," said ATA president Stuart G. Tipton.

CAB procrastination on fares, which is fast assuming the stature of economic sabotage, showed the most damaging effects. Since the carriers' early-1957 bid and Board refusal of an emergency 6% fare hike, industry has lost the chance to take in about $68 million vitally needed for jet expansion.

And with the General Passenger Fare Investigation already 406 days old, the prospect of no decision until spring of 1959 promised to prolong the carrier's economic anguish for another year to come.

Labor, through strikes and strike threats, ran CAB a close second in making industry's transition to turbines a stormy one.

With little relief in sight at the year-end, five carriers were still feeling the effects of $53 million in lost revenues due to work stoppages. They lost a combined 189 days of operation.

Employes of four airlines—Western, Capital, TWA and Eastern—forfeited more than $20 million in wages as the processes of the Railway Labor Act failed miserably.

But the dollar impact of the labor strife extended far beyond lost revenues. Boeing 707 jet service by Pan American, after two full months of operation using only supervisory pilots, was being seriously hampered by pilot demands for payscales ranging up to $45,000 annually.

Eastern Air Lines' three-year-long wait to launch Electra turboprop service on December 1 saw that carrier's $16-million fleet of eight Electras grounded by a simultaneous walkout of mechanics and flight engineers that bit deeply into Florida traffic revenues.

Discounting future pilot wage settlements, increases granted to mechanics alone were estimated at $37 million, $7 million more than the industry earned in 1958.

And the general business recession rounded out the air carriers' problem trio by slicing passenger-mile traffic gains to something less than 2% over 1957 instead of the customary 13% to 18%. Although disappointing, air transport fared well in this respect in the light of first-half losses of 17% and 4.5% for competitive railroad and bus travel.

Here's how various elements of industry fared for the year:

**Total Travel**—Overall U.S. scheduled carriers flew 31.8 billion revenue passenger miles, 1.8% over 1957. Mail ton-miles rose 7.6% to 173 million, express was up 4.3% to 48 million ton-miles. Freight dropped 5.6% to 478.4 million ton-miles.

**Total Domestic**—Carriers flew 25.5 billion passenger miles, up 1.1%; mail 105.2 million ton-miles, a 6.5% increase; express 47.3 million, up 6.7% and freight 234.6, up 6.4%. Revenue ton-miles increased 1.7% to 2.8 billion.

**Domestic Trunks**—Passenger-miles rose 1% to 24.7 billion; mail ton-miles 103.5 million, up 6.4%; express 45.6 million, up 6.7% and freight increased 6.4% to 232.5 million ton-miles. Revenue ton-miles totaled 2.8 billion, up 1.5%.

**Local Service**—Passenger miles increased 7% to 799.5 million; mail 7.8% to 1.6 million ton-miles; express 5.7% to 1.7 million ton-miles and airfreight was up 2.3% to 2.1 million ton-miles. Total of 84 million revenue ton-miles represented 7.1% rise.

**Helicopter**—Three scheduled helicopter services flew 4.9 million passenger miles, 51% over 1957. Mail was off 6% to 85,000 ton-miles; express rose 17.4% to 40,000 ton-miles and airfreight dropped 36.4% to 9,000 ton-miles. Overall revenue ton-miles were up 35% to 600,000.

## Air Transport Vital Statistics

***Traffic***

**. . . up only 1% instead of normal 13 to 18%**

***Revenues***

**. . . up only 7.4%, but matched by**

***Expenses***

**. . . up 6.3% setting industry back to 1950 level of**

***Profits***

**. . . $30 million**

## The Strike Toll

***Lost revenue***

**. . . better than $53 million**

***Lost operation***

**. . . 189 days**

***Lost wages***

**. . . more than $20 million**

***Lost event***

**. . . Dec. 1 inaugural of Lockheed Electra set back indefinitely**

## The Big Issues

***A fare increase***

**. . . but aging CAB probe promises too little, too late**

***Crew complement***

**. . . a jet safety issue turned political by union pressures**

## The 1959 Outlook

**. . . a year of big decisions that will make or break U.S. transport industry**

**All-cargo**—Shutdown of service by Slick Airways dropped mail traffic 40.2%, express 56.2% and freight 31%. Carriers handled 1.1 million ton-miles of mail; 700,000 ton-miles of express and 107 million ton-miles of air-freight, with total ton-miles declining 11.3% to 298.7 million ton-miles.

**International**—Passenger miles rose 4.9% to 6 billion; mail was up 10.8% to 63.4 million; cargo 4.7% to 129.1 million and total revenue ton-miles rose 6.1% to 907 million.

### '58 Revenues of Domestic Trunk Airlines

| Operating Revenues | 1957 (In Millions) | 1958[1] | Percent Increase |
|---|---|---|---|
| Passenger | $1,287.2 | $1,380.9 | 7.3 |
| U.S. Mail | 33.8 | 35.8 | 5.9 |
| Express | 14.7 | 14.2 | (2.9) |
| Freight | 49.9 | 55.4 | 11.1 |
| Other[2] | 34.1 | 38.5 | 12.9 |
| Total Revenues | 1,419.6 | 1,524.8 | 7.4 |
| Operating Expenses | 1,377.6 | 1,464.6 | 6.3 |
| Net Operating Income | 42.0 | 60.2 | 43.1 |
| Net Profit (After Taxes and Interest) | 27.0 | 30.0 | 11.2 |
| Profit Margin on Sales | 1.9% | 2.00% | |
| Return Margin on Sales[3] | 3.0 | 3.5 | |
| Return on Investment[4] | 4.8 | 5.2 | |

[1]Based on 9 months actual, last three months estimated.
[2]Includes revenues from excess baggage, charter operations, other transport services, and incidental non-transport revenues, and public service revenues.
[3]Net profit plus interest on long-term debt as percent of operating revenues.
[4]Net profit plus interest on long-term debt as percent of net worth plus long-term debt.

### '58 Estimated* Traffic Scheduled Airlines

| | 1957 (In Millions) | 1958 | Percent Increase |
|---|---|---|---|
| **Domestic Trunk** | | | |
| Revenue Passenger Miles | 24,499.5 | 24,735.0 | 1.0 |
| U.S. Mail Ton Miles | 97.2 | 103.5 | 6.4 |
| Express Ton Miles | 42.8 | 45.6 | 6.7 |
| Freight Ton Miles | 218.4 | 232.5 | 6.4 |
| Revenue Ton Miles | 2,720.0 | 2,762.0 | 1.5 |
| **Local Service** | | | |
| Revenue Passenger Miles | 747.3 | 799.5 | 7.0 |
| U.S. Mail Ton Miles | 1.5 | 1.6 | 7.8 |
| Express Ton Miles | 1.6 | 1.7 | 5.7 |
| Freight Ton Miles | 2.1 | 2.1 | 2.3 |
| Revenue Ton Miles | 78.4 | 84.0 | 7.1 |
| **Helicopter (data in thousands)** | | | |
| Revenue Passenger Miles | 3,273 | 4,900 | 50.9 |
| U.S. Mail Ton Miles | 91 | 85 | 6.0† |
| Express Ton Miles | 35 | 40 | +17.4 |
| Freight Ton Miles | 14 | 9 | 36.4† |
| Revenue Ton Miles | 450 | 600 | 34.9 |
| **International** | | | |
| Revenue Passenger Miles | 5,751.7 | 6,035.8 | 4.9 |
| Mail Ton Miles | 57.3 | 63.4 | 10.8 |
| Cargo Ton Miles | 123.3 | 129.1 | 4.7 |
| Revenue Ton Miles | 854.7 | 907.0 | 6.1 |
| **Alaskan** | | | |
| Revenue Passenger Miles | 151.9 | 157.1 | 3.4 |
| Mail Ton Miles | 2.7 | 3.1 | 13.1 |
| Cargo Ton Miles | 7.2 | 6.1 | 15.4† |
| Revenue Ton Miles | 32.9 | 29.4 | 10.4† |
| **Territorial** | | | |
| Revenue Passenger Miles | 89.5 | 81.6 | 8.8† |
| U.S. Mail Ton Miles | 0.07 | 0.08 | 23.1 |
| Cargo Ton Miles | 1.5 | 1.6 | 6.0 |
| Revenue Ton Miles | 9.0 | 11.3 | 25.7 |
| **All Cargo** | | | |
| U.S. Mail Ton Miles | 1.8 | 1.1 | 40.2† |
| Express Ton Miles | 1.6 | 0.7 | 56.2† |
| Freight Ton Miles | 155.1 | 107.0 | 31.0† |
| Revenue Ton Miles | 336.9 | 298.7 | 11.3† |

* Domestic trunk figures are based on 10 months actual and two months estimated. All-cargo and Alaskan figures are based on six months actual and six months estimated. The other groups are based on nine months actual, three estimated.
† Decrease.

# How Did Industry Do?

## AIA estimates place sales at $11.8 billion in 1958

Sales of the aircraft and missile industry are estimated at $11.8 billion for 1958, in a year end statement by General Orval R. Cook (USAF, ret.), president of Aircraft Industries Association. Short of a national emergency indications are that 1959 sales will hold at the same level.

Of these totals sales of 12 major airframe manufacturers amounted to $7 billion compared with $6.9 billion in 1957. Earnings, General Cook said, continued to decline. Average net profit, as a percentage of sales for the 12 companies has dropped from 3.7% in 1954 to 2.4% in 1957.

Backlogs have declined $1.4 billion since Jan. 1, 1958. As of Sept. 30, the reported backlog was $13.1 billion as compared with $14.5 billion on Dec. 31, 1957. Reduction in military aircraft backlogs accounted for about $1 billion of the 1958 decrease. Commercial backlogs were reportedly "fairly constant."

Average hourly wages climbed from an annual average of $2.36 in 1957 to $2.55 in Sept., 1958. Similarly, average weekly wages have risen from $96.76 in 1957 to $103.79 in Sept. 1958, an increase of about 7%.

Total commercial aircraft production, including helicopters, is estimated at 6,780 units, a slight increase over the 1957 totals. About 225 transports were delivered in 1958 as compared to 322 transports in 1957. More than 50 of the total were turbine powered. Reduced deliveries were explained in terms of the phasing out of piston-powered airliners early in the year. As of Oct. 31, U.S. manufacturers had orders for more than 600 turbine transports valued at about $3 billion, Gen. Cook continued.

Utility aircraft production moved somewhat higher in 1958, with the delivery of about 6,300 aircraft with a value of about $100 million.

Military aircraft production dropped from an estimated 5,500 units in 1957 to 4,000 units in 1958, and the decline is expected to continue in 1959.

## Breguet Combine Gets Nod In NATO Competition

The design proposal submitted by France's Brequet and supported by a combine of four other European aircraft manufacturers, A. V. Roe, Fokker, Dornier and Sud Aviation, has won full support of all interested countries in the heated competition for selection of a NATO patrol bomber.

Signing of an order has not yet been completed with Brequet, but unquestionable French sources state that this is all that remains to be done. The Standing Group of NATO has supported the approval of the project and competing companies have been told that their submissions have been rejected. Lockheed, Convair and Douglas represented U.S. manufacturers who gave the proposal serious consideration.

A British team of Bristol and Short

*McDonnell Aircraft Corp. photo*

## Navy Selects McDonnell F4H-1 Fighter

Winner in Navy's all-weather supersonic, long-range, carrier-based fighter contest is the McDonnell F4H-1—powered by two General Electric J79 (static thrust—10,000 lbs. each) engines and capable of speed in excess of 1,320 mph. Decisive in the victory over the single place Chance Vought F8U-3 was that the plane carries both a pilot and a radar operator and has a built-in safety factor with the use of two engines. The plane is 56 ft. long, has a wingspan of 38 ft. 5 in. Weight and range are classified. Initial contract was for 23 aircraft estimated to cost about $7.4 million each, including spares. New production contract is expected to reduce unit cost sharply. Plane scheduled for operational use in early 1960s.

Bros. and Harland formed an alliance with an unidentified continental associate in the bidding and two other French manufacturers, Nord-Aviation and Dassault, submitted proposed projects. Italy's Piaggio entered specifications for a large flying boat.

## Aircraft Exchange Reports Landslide of Interest

Aircraft Exchange, a revolutionary marketing service for used aircraft which was founded in New York the first part of this month, reports that response from industry, financial houses and other interested parties has far exceeded early expectations.

In the first 12 days following the mailing of brochures advertising its services, more than 17 firms had joined the marketing exchange.

Although a complete list of members is not available, it was learned that the following companies have joined the exchange: Capital Airlines, American Airlines, Trans World Airlines, Panagra, Sabena, Philippine Air Lines, Hawaiian Airlines, Icelandair, Slick, International Corp., Stone and Webster, Aviation Financial Services, Oppenheimer and Co. and Aircraft Service Corp.

## Fairchild Engine & Aircraft Top Job to Carmichael

James H. (Slim) Carmichael is the new president of Fairchild Engine & Airplane Corp. He came to Fairchild less than four months ago, to take the post of corporate vice-president for commercial transportation. Less than a month ago, Mr. Carmichael was named executive vice-president.

Mr. Carmichael succeeds Richard S. Boutelle, who was elected vice-chairman of the Board, and will retain an active role in management. Both Mr. Carmichael and Mr. Boutelle were elected to the executive committee. Other members are: Sherman P. Fairchild, chairman of the Board; Earnshaw Cook; Admiral Robert B. Carney (USN ret.), and W. Preston Lane, former Governor of Maryland.

## GALCO Filing Reveals General Dynamics Backing

General Aircraft and Leasing Co. has completed arrangements with American Airlines for the purchase of 25 Douglas DC-7 aircraft for a gross price of $22,875,000. The negotiation, which was revealed in papers filed with the CAB seeking a ruling on section 408 of the Civil Aeronautics Act, discloses that GALCO's first major financial transaction is supported by notes guaranteed by General Dynamics Corp.

Section 408 of the Act stipulates the ground rules for transferring a substantial amount of a carrier's property in questions of control and merger. American stated in the petition, which was filed jointly with GALCO, that the aircraft will represent 4.2% of its total assets by July, 1958, and 8.9% of the book value of its fleet. The filing also stated that this represents less than the sales impact would have been if a block sale were spread over a similar period.

The purchase price of the Douglas aircraft comes to $915,000 per plane. The first two DC-7s are due to be delivered next month, three in February, six in April, six in May, two in June and one in July.


*Convair photo*

## First 880 Rolls Out at Convair-San Diego

Convair rolled out its gold striped Model 880 at San Diego shortly before Christmas, two weeks ahead of schedule, in preparation for an extensive flight and ground testing program designed to win CAA certification by the spring of 1960 for the 615-miles-per-hour jet transport.

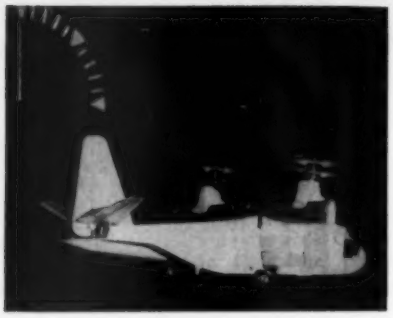
Powered by four General Electric CJ-805-3 engines, the 880 is an 88-passenger plane built for medium-range operation. The first plane will make its maiden flight in six to eight weeks, according to Convair spokesmen. The second 880 to be rolled out will be used in structural integrity tests on the ground and the third aircraft is scheduled to fly by April, 1959. The fourth is due out of the hangar the following month. The first plane to be delivered for airline service, actually the fourth airplane in the series, is to be delivered to Trans World Airlines in November of next year.

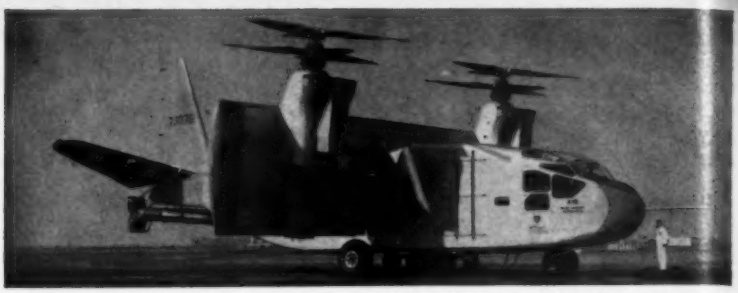
### 880 Specifications

| Performance | Basic | Intercontinental |
|---|---|---|
| Cruising Speed | 615 mhp | 615 mph |
| Range[1] | 3,450 st. mi. | 4,210 st. mi. |
| Stalling Speed | 113 mph | 106* mph |
| Maximum Cruise Altitude | 40,000 ft. | 40,000 ft. |
| Rate of Climb[2] | 3,700 fpm | 3,140 fpm |
| Fuel Consumption[3] | 1,700 gal./h. | 1,700 gal./hr. |
| Takeoff CAR Runway[4] | 5,200 ft. | 5,500 ft. |
| Landing CAR Runway[4] | 5,300 ft. | 4,930 ft.[5] |
| **Capacities** | | |
| Passengers[6] | 88 | 88 |
| Payload[7] | 23,150 lbs. | 23,150 lbs. |
| Fuel | 10,770 gal. | 13,870 gal. |
| Oil | 28 gal. | 28 gal. |
| Cargo Capacity | 863 cu. ft. | 863 cu. ft. |

| Dimensions | Basic | Intercontinental |
|---|---|---|
| Overall Wing Span | 120 ft. | 120 ft. |
| Wing Area | 2000 sq. ft. | 2000 sq. ft. |
| Overall Length | 129 ft. 4 in. | 129 ft. 4 in. |
| Height Over Tail | 36 ft. 4 in. | 36 ft. 4 in. |
| **Weights** | | |
| Maximum Landing Gross Weight | 132,800 lbs. | 155,000 lbs. |
| Maximum Takeoff Gross Weight | 184,500 lbs. | 203,400 lbs. |
| Maximum Ramp Weight | 185,000 lbs. | 204,000 lbs. |
| Maximum Zero Fuel Weight | 117,000 lbs. | 126,000 lbs. |

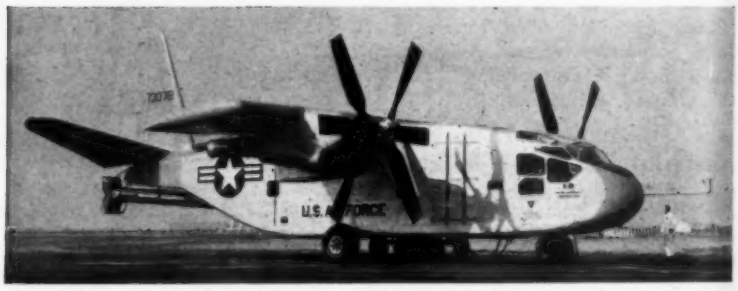
[1]Full first-class payload and normal reserves, [2]Sea level, normal power, takeoff weight, [3]30,000 ft. @average cruise power, [4]Sea level standard conditions; 1,750-mi. trip, [5]With wing leading edge devices, [6]Coach version carries 110, [7]Coach version—26,780 lbs.





**WINDTUNNEL** model and airplane show wing in vertical flight-hover position.

**WING TILTED,** for STOL would be set about 45 deg. as on actual airplane.



**WITH WING** in horizontal position, X-18 performs like conventional turboprop.

# Hiller Rolls Out X-18

On December 8, the Hiller X-18 "Propelloplane" was rolled out of final assembly.

Weighing in at 33,000 lbs., the X-18 is the largest vertical-rising aircraft built in this country to date. And, although it was designed strictly as a tilt-wing test bed, its general appearance and size are those of a transport.

This large configuration was not chosen arbitrarily. The greatest need for a VTOL/STOL airplane is in the intermediate-range transport category—and only a test bed of comparable size can produce practical background data.

Armed with this and a $4-million development contract from the Air Force, Hiller's engineers retired to the drawing board and two years later emerged with their unorthodox design.

Seeking to keep an essentially complicated task as simple as possible, Hiller used existing components and production methods throughout. Nose and tail sections, for example, were taken from a Chase transport. For ease of fabrication, a single fuel cell was placed in the fuselage and the aft exhaust was left exposed.

Any future airplanes that might be based on the X-18 design would have this single tank split in two and moved to the wings with tip tanks possibly added. The tailpipe would be covered with a faired nacelle to minimize drag in that area.

The X-18's two Allison T-40 turboprops (same engine that powered the Convair XFY-1 Pogo) put out 11,070 eshp to drive dual, six-bladed, Curtiss-Wright turbolectric propellers. A 3,400 lb. thrust Westinghouse J-34 is placed along the aircraft centerline to provide hover and transition control.

Prospective X-18 pilots will find the cockpit controls are the same as any turboprop airplane. The only addition is a wing tilt lever.

In forward flight, conventional control surfaces will be used, but, with transition to hover, a second set comes into play. The pilot will slow the airplane, light the jet engine and move the tilt lever to the 90 degree wing position.

Pitch control will now come from diverted jet thrust from the J-34, roll from differential propeller thrust and yaw from the ailerons acting in the propeller downwash.

Hiller, in six years of VTOL research with NASA, has developed considerable windtunnel and design data that says the X-18 makes high-payload, high-speed vertical/horizontal flight practical. In April they intend to get up in the air to prove it.

# FAA Contract Score

## R&D bureau has awarded more than $14 million worth

Federal Aviation Agency's Bureau of Research and Development in its short, 16 months of operation has awarded 34 contracts worth well over $14 million in a program to update the nation's airways facilities.

Established in Aug. 1957, BRD's predecessor, Airways Modernization Board, recruited and organized a staff and issued its first contract in only three months. This is no mean feat when one considers all the steps leading to the getting of a contract, and it's typical of BRD's vigorous approach to solving the problems of future air traffic control.

Nearly 65% of the contracts let are for studies. This gives the impression that BRD has been going heavy on the research side and light on development. But, in fact, this 65% represents only 10.7% of the total dollar investment—a surprisingly low figure for the first year of operation.

Three firms share over 79% of the money being shelled out for studies (see table). Airborne Instrument Lab., Inc. leads with cost-established study contracts totaling $311,443. One is for analysis of aircraft movements in the New York area, and another for engineering services in connection with BRD's evaluation of the Bendix-Decca short-range navigation equipment being evaluated in New York Airways' helicopters. In addition A.I.L. has a contract of undetermined value, but at least $100,000, for other engineering services.

Chicago consulting firm Booz, Allen and Hamilton comes next with a $342,370 contract to measure and forecast density of air traffic on a nationwide basis. (A/A August 11, p. 19).

GPL is responsible for development of hardware for the transition, terminal and en route portions of BRD's ATC data processing central. The company's $8¼ million contract covers only the experimental phase of this major project.

The vast majority of this year's contracts have been related to air traffic control in keeping with AMB's function. It's reasonable to expect that BRD, with its added responsibilities, and a new (reportedly $30 million) budget coming up, will probe more deeply into other marginal areas such as aircraft exterior lighting, instrumentation etc. as well as airport lighting, marking and surfacing.

| Contractor | Contract For | Effective Date | Complete Date | Amount |
|---|---|---|---|---|
| Airborne Instrument Lab., Inc. Mineola, N.Y. | Study N.Y. air traffic including surface movements. | 11/22/57 | 7/1/58 | $148,852.00[f] |
| The Franklin Institute. Philadelphia, Pa. | Operations study of air traffic demands & delays in N.Y. ARTCC area. | 12/2/57 | 6/1/58 | 59,014.00[c] |
| University of California. Berkeley, Calif. | Study high-speed turn-offs including lighting. | 1/17/58 | 3/16/59 | 102,066.00[f] |
| Bell Helicopter Corp. Ft. Worth, Texas. | Modify H-13H helicopter and flight train AMB personnel. | 12/26/57 | 4/25/58 | 48,205.95[c] |
| Pacific Div., Bendix Aviation Corp. N. Hollywood, Calif. | Rent Bendix-Decca Navigation System for evaluation in N.Y. area. | 1/28/58 | 9/59 | 175,000.00[f] |
| New York Airways, Inc. Flushing, N.Y. | Evaluate performance of Bendix-Decca airborne navigation equipment. | 3/26/58 | 9/59 | 81,622.80[f] |
| Airborne Instrument Lab., Inc. Mineola, N.Y. | Engineering services relative use of Bendix-Decca system. | 3/3/58 | 9/59 | 162,591.00[c] |
| General Precision Lab., Inc. Pleasantville, N.Y. | ATC Data Processing Central to termination of experimental phase. | 2/7/58 | 2/61 | 8,244,448.15[c] |
| Mills Petticord & Mills. Washington, D.C. | Survey of sites for AMB's proposed Research Center. | 4/4/58 | 6/3/58 | 8,400.00[f] |
| International Bus. Mach. Corp. New York, N.Y. | Fast time simulation and statistical data. | 3/26/58 | 10/25/58 | 57,543.00[f] |
| Aircraft Armaments, Inc. Cockeysville, Md. | Simulator for use with GPL Data Processing and Display system. | 4/1/58 | 5/15/59 | 1,993,227.50[c] |
| Human Science Research, Inc. Arlington, Va. | Human engineering relative to airport lighting & marking. | 5/20/58 | 2/19/59 | 40,039.40[f] |
| The Franklin Institute. Philadelphia, Pa. | "Quick Reaction" engineering and scientific professional services. | 6/6/58 | 6/5/59 | Not established |
| Cornell Aeronautical Lab., Inc. Buffalo, N.Y. | Same as above. | 6/11/58 | 6/10/59 | As above |
| Airborne Instrument Lab., Inc. Mineola, N.Y. | Same as above. | 6/6/58 | 6/5/59 | As above |
| United Research, Inc. Cambridge, Mass. | Method of determining economic value of AMB landing system program. | 6/2/58 | 1/1/59 | 43,714.00[c] |
| Doman Helicopters, Inc. Danbury, Conn. | One Delta simulator visual attachment for flight simulators and instrument trainers. | 6/11/58 | 9/10/58 | 38,544.00[f] |
| Mills Petticord & Mills. Washington, D.C. | Preliminary & design services, supervision of construction, runway extension at NAFEC. | 6/13/58 | 12/31/58 | 144,500.00[f] |
| Radio Corporation of America. Camden, N.J. | One complete experimental Automatic Ground/Air/Ground Communications System. | 6/30/58 | 7/31/59 | 1,400,939.00[c] |
| Booz, Allen & Hamilton. Chicago, Ill. | Air traffic measurement & forecast. | 7/1/58 | 6/30/59 | 343,370.00[f] |
| Southwest Research Institute. San Antonio, Texas. | Study of radio D/F capabilities related to ATC. | 8/5/58 | 2/4/59 | 15,910.00[c] |
| Applied Psychology Corp. Arlington, Va. | Present status and future potential of anti-collision lights. | 7/8/58 | 8/7/58 | 5,175.40[c] |
| William M. Wolf Co. Boston, Mass. | Air Defense/Air Traffic Control integration study. | 8/25/58 | 2/24/59 | 19,967.92[c] |
| General Precision Lab., Inc. Pleasantville, N.Y. | Lease of aircraft & RADAN with crew for max. 65 flt. hours. | 8/15/58 | 10/1/58 | 15,340.00[f] |
| Marchand Electronic Labs. Greenwich, Conn. | Study of ATC problems. | 8/25/58 | 8/24/59 | 14,975.00[f] |
| Courtney & Co. Philadelphia, Pa. | Assistance in ATC systems design. | 8/11/58 | 8/10/59 | 135,494.00[c] |
| Armour Research Foundation. Chicago, Ill. | Measurement of en route air navigation accuracy. | 8/6/58 | 6/5/59 | 67,662.00[c] |
| Doman Helicopters, Inc. Danbury, Conn. | Installation of Dalto visual attachment for flight simulators. | 8/12/58 | 12/11/58 | 31,600.00[c] |
| University of Michigan. Ann Arbor, Mich. | Study of systems engineering applicable to air traffic problems. | 9/22/58 | 11/30/59 | 140,000.00[f] |
| Corp. for Eeconomic & Ind. Res. Arlington, Va. | Analysis of military local flying. | 9/25/58 | 1/24/59 | 5,799.27[c] |
| General Communications Co. Boston, Mass. | Modification of Beacon Interrogator test equipment. | 10/10/58 | 12/9/58 | 3,391.50[f] |
| Courtney & Co. Philadelphia, Pa. | Human factors activity analysis of ATC facilities. | 10/30/58 | 11/29/59 | 98,557.00[c] |
| Ebasco Services, Inc. Washington, D.C. | Engineering Services (facilities planning). | 11/17/58 | 12/31/58 | 7,300.00[f] |
| General Railway Signal Co. Rochester, N.Y. | Experimental Taxiing & Routing of Aircraft—Coordination Equipment (TRACE). | 11/18/58 | 8/17/59 | 381,786.00[c] |

[f]—Fixed Price contract, total amount. [c]—Cost Plus Fixed Fee contract, estimated total amount.

Harry F. Guggenheim

William B. Harding

Edward P. Curtis

## Group to Aid FAA Personnel Selection

Three top ranking industry officials have been named by FAA Administrator E. R. Quesada to form a committee to serve in an advisory capacity in the selection of personnel to fill key FAA assignments.

The screening and evaluating group consists of Edward P. Curtis, vice president of Eastman-Kodak, who earlier this month received the Collier Trophy Award for 1957 as a result of the "Aviation Facilities Planning" report which he prepared for President Dwight Eisenhower; William Barclay Harding, who has been prominent in aviation law since the late 1920s, and Harry F. Guggenheim, senior partner of Guggenheim Bros., a member of the former NACA and long active in aviation affairs.

The first meeting of the group was held in Washington the middle of this month. Its primary function is to sift the responses to 100 letters sent to industry leaders and government officials by Quesada in an attempt to find the best qualified men to fill 11 top jobs.

Response to the queries did not match what had been anticipated, but FAA spokesmen said a large number of applications are now on file. Pay for the unfilled positions ranges from $14,000 to $19,000 annually.

## DEFENSE ANGLES

**By Betty Oswald**

*"The United States is no frail reed to be bent to the ground by a single blast. But if we doze, if in our complacency, we forget the deadly earnestness of the enemy, his ever-increasing technical competence, and his undoubted ability to deliver his new weapons, then, I say, our strength will not avail us."*

These were the words of General Hoyt S. Vandenberg, former Air Force Chief of Staff, in the summer of 1953, just after his retirement and just before his death. They are repeated here because once again we are facing a new budget, a new reorganization, a new Congress and a new challenge from the enemy. The latest challenge is the nuclear propelled aircraft, with reports indicating that Soviet Russia has or will soon fly such a plane. And these reports have been questioned by President Eisenhower and by his Defense Secretary Mr. McElroy; both have "doubted" that such a plane has been flown.

• **Fast shuffle**—Do you know how long Defense Secretary McElroy and the Pentagon fiscal experts were given at Augusta, Ga. recently to present the defense budget to President Eisenhower? Approximately 11 minutes—about the same time as it takes for a slow walk from the third green to the fourth tee on the golf course.

Result is that the men working on the budget under a fiat to hold appropriations to approximately $40 billion and spending to about $42 billion are "working without clear-cut guidance." To make a bad matter worse, Mr. McElroy, just home from a long official trip, is again in Europe attending the NATO conference and Assistant Defense Secretary W. J. McNeil (Comptroller) has been ill for some time.

• **Stop the music**—Military will start playing musical chairs shortly after the first of the year, with General Edwin Rawlings slated to retire as chief of the Air Materiel Command in February or March. Climax will come about June 30 when Army Chief of Staff General Maxwell Taylor and Admiral Arleigh Burke, Chief of Naval Operations, complete their four-year tours of duty. At the same time, General Nathan Twining, Chairman of the JCS, and General Thomas D. White, AF Chief of Staff, complete their first two-year terms. Normally, members of the JCS have not served for more than four years (two terms of two each). Answers won't be available until late Spring, but Service politicking will be clearly visible much earlier.

• **Too much, too soon**—Second thought on the nuclear powered aircraft race with Russia. How long would it have taken the Navy to get a nuclear powered submarine if the demand had been to make it a Polaris-type? What would have happened if the Navy had been forced to approve a single reactor concept for the Nautilus rather than to develop two somewhat opposing concepts to hardware stage? This is the secret of the current loss of face in the aircraft race. Capable scientists indicate that if Navy had been forced to a single choice in the beginning it would have backed the wrong reactor. Real battle to develop parallel approaches for major components rather than tailoring of components to the big picture too early can be expected for the future.


JUNE 19, 1958: Bliss-built overrun safety barrier successfully tested at Van Nuys

# SEPT. 30, 1958: Barrier snags runaway Sabre Jet—saves both pilot and plane!

This one engagement alone has saved more dollars than the entire cost of the installation!

The only type of jet arresting mechanism of its kind in use today, the Bliss Barrier was first tested at Bliss' own Woodbine Airport, then installed and tested at California Air National Guard Field at Van Nuys. During the Van Nuys tests, an F-86 hit it at 78 mph and was stopped in 191 feet. In another test, the nine-ton plane hit it at 106 mph and was halted 248 feet out. "A gentle, smooth but positive stop," said the test pilot, "like hitting a big pillow..."

But the real test came when Lt. McGirl, of the CANG made a night landing without brakes and hit the barrier off center at 70 mph! Even though extremely off center, the unique Nylon transmission belt flipped the steel cable up just right to engage the plane and pull it to a sure, straight stop without damage—just 200 feet short of a 30-foot deep highway excavation.

Bliss-built catapults are used aboard the nation's aircraft carriers. And the contributions of our engineers to arresting gear are a matter of record. It now seems likely that barriers will become basic to land-based operation, too. Not just for the military, but for commercial operations as well, where there is a problem of landing heavier, faster planes on hemmed-in runways. If you'd like to learn more about Bliss-built barriers, why not drop a line to *E. W. BLISS COMPANY*, INTERNATIONAL AIRPORT, PHILADELPHIA, PA., or to our general offices.

BLISS
SINCE 1857

**E. W. BLISS COMPANY, Canton, Ohio**

**Catapults · Barriers · Missile parts, launching and handling equipment**

*"A night landing... my brakes failed... and I was eating up runway at 70 mph. I engaged the barrier way off center but she held firm, bringing me to a stop two hundred feet out... just two hundred feet short of a 30-foot deep highway excavation and a steel blast fence!"*

*Lieutenant McGirl, pilot of the F-86 Sabre Jet, tells a member of his squadron what it is like to engage the barrier.*


*Photo courtesy California A. N. G.*

**Circle No. 8 on Reader Service Card.**

# Lear's Bid for New Markets

By Richard van Osten
West Coast Editor

SANTA MONICA, CALIF.—Officials of LearCal Division of Lear, Inc. are exhibiting a new brand of enthusiasm as to how big a slice of the airline and general air transport market the company will pick off with the company's new line of navigation, communication and flight control systems.

Estimates of a 60% market penetration come from the more optimistic, but the average prediction settles around 30%. Even this is a fair sized chunk, especially for a 29-year-old firm founded principally on private and business aviation.

Lear's business with airlines to date has been confined to actuators by Lear-Romec, gyros out of Grand Rapids Division and some antenna output.

Step one in the company's airline program was to embark on a development program of new flight director systems. Next came an airline radio development program employing state-of-the-art techniques. Last was a specialized transport sales organization set up here within LearCal.

Principal items now being delivered for airline use are the Lear Integrated Flight Equipment (LIFE) (A/A, Sept. 8, p. 45), the L-102 and L-5B autopilots. Latter is an updated version of Lear's much-produced F-5 military autopilot. Lear autopilots are offered as standard equipment in Sud Aviation's Caravelle, Lockheed's JetStar, McDonnell's 119, and are installed in the Boeing 707 prototype and production KC-135. Formal designation is CIS-100 (Command Instrument System). Another airline product is the Gonio Loop Antenna System (A/A July 14, p. 31).

In designing airline equipment, Lear has tried to benefit from operator experience and pilot comment about present flight director systems. One repeated complaint was the complexity of systems which makes transition from visual to instrument flight difficult. Main objections cited were the crossing of needles on an instrument face and the need for simplification of display instruments. Lear feels both "complaints" have been remedied in the LIFE concept.

Comments about simplicity often boiled down to "too many marks" on instrument faces, particularly those showing degree of bank. Lear eliminated all but 30° marks on the attitude-and-command instrument. For those pilots who prefer bank indications in 5° increments, Lear leaves the option to the purchaser.

The L-102 is all-transistorized and the more flexible of the two units. Extended capabilities of the L-102 include Mach control, automatic preselection of altitude, and other features. Cost of the L-102 is in the $20,000 bracket as compared to the L-5B price in the $10,000 bracket.

As a sidelight, the Lear system minus an autopilot has so impressed some business and executive operators, that the company says it has become a marketing problem to sell an autopilot after LIFE is installed.

Lear is also pushing its Gonio Loop (FLA-200) ADF antenna for airline application—terming the device a "door opener" to transport operators. Designed to eliminate maintenance problems of rotating ADF loops, the FLA-200 has been in development for several years.

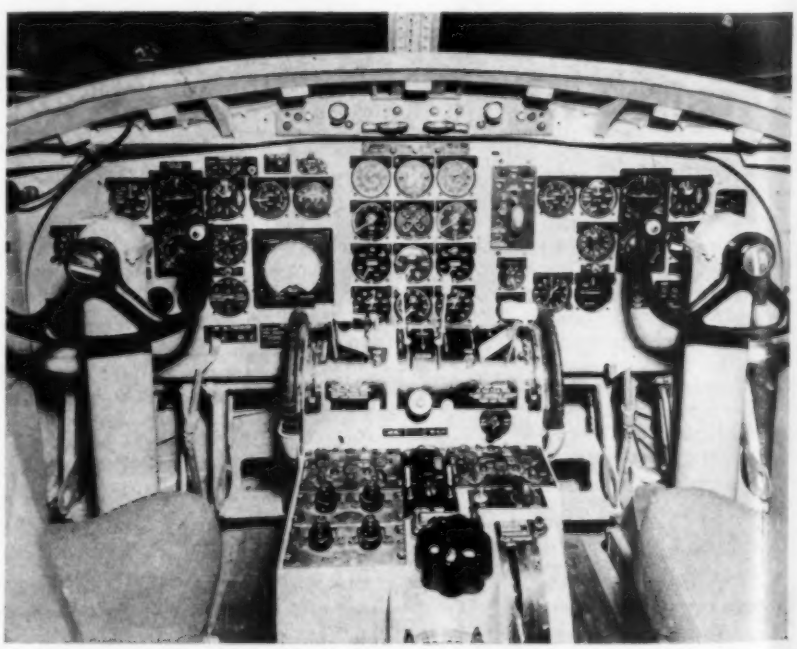
The ADF antenna is under evaluation by several airlines and airframe manufacturers. Company officials say that the most commonly asked question about the systems is "It's so simple. Why wasn't it done years ago?" There were working models about four years ago, but the ferrite available at the time lacked precision and consistency in performance. Developments in this area made the new approach producible.

Lear also is developing the FLA-100, with some differences in construction, cost, and weight for light aircraft.

Pulling on almost 30 years of experience in ADF equipment, the company has a new receiver, the ADF-200, in a pre-production state. It will be available in a 3/8 ATR package, but a ½ ATR package also will be offered to meet interchangeability.

Still another system for which Lear has hopes in the transport field, is the NAVCOM 200—designed to cover all communication and navigation requirements. Targeted primarily to airline aircraft, the company believes that the 10-watt NAVCOM 200 also is an excellent system for all business aircraft. Several air carriers are considering the system.

The unit provides 560 "receive" and 360 "transmit" channels on VHF with navigation capabilities, a three-light marker beacon receiver, glide slope receiver, interphone, and isolation amplifier.



**ALPA APPROVED** panel of Lear (CIS-100) Command Instrument System in F-27.

## Accent on Doppler

### Collins hosts symposium for European airlines

GENEVA, SWITZERLAND—The accent was heavy on Doppler navigation here earlier this month as Collins Radio Co. played host to representatives of all major European airlines with a symposium on its airborne communications and navigation gear.

Collins is offering carriers its DN-101 Doppler radar navaid for availability in November 1959 and priced at $16,000 or $18,700 (according to antenna) for single installation and $31,350 for dual.

A companion NC-103 computer system will be available in February 1960 and tentatively is priced at $10,000.

Stressing the tailor-made aspects of its DN-101 for airline operations, company officials gave this outline of what a Doppler unit should supply and how its equipment fills the bill.

• **Loop gain**—Sufficient to track over smooth seas at altitudes up to 40,000 ft. Collins claims 15 db more gain for the DN-101 over other Dopplers, 3 db over that specified by Aeronautical Radio, Inc. in its Characteristic No. 540 for such equipment. Fixed antenna—DN-101 uses a fixed antenna with a beam width of about 4.75 degrees.

• **Altitude holes**—Ideal Doppler would have no altitude holes from 0 to 40,000 ft. Use of FMCW (frequency modulated continuous wave) forestalls appearance of the first altitude hole to 57,000 ft., according to Collins.

• **Space and weight**—System should use transistors or other semiconductors to save weight, size and power consumption. The DN-101 uses only six tubes yet 55 transistors, weighs 65 lbs., consumes 260 watts.

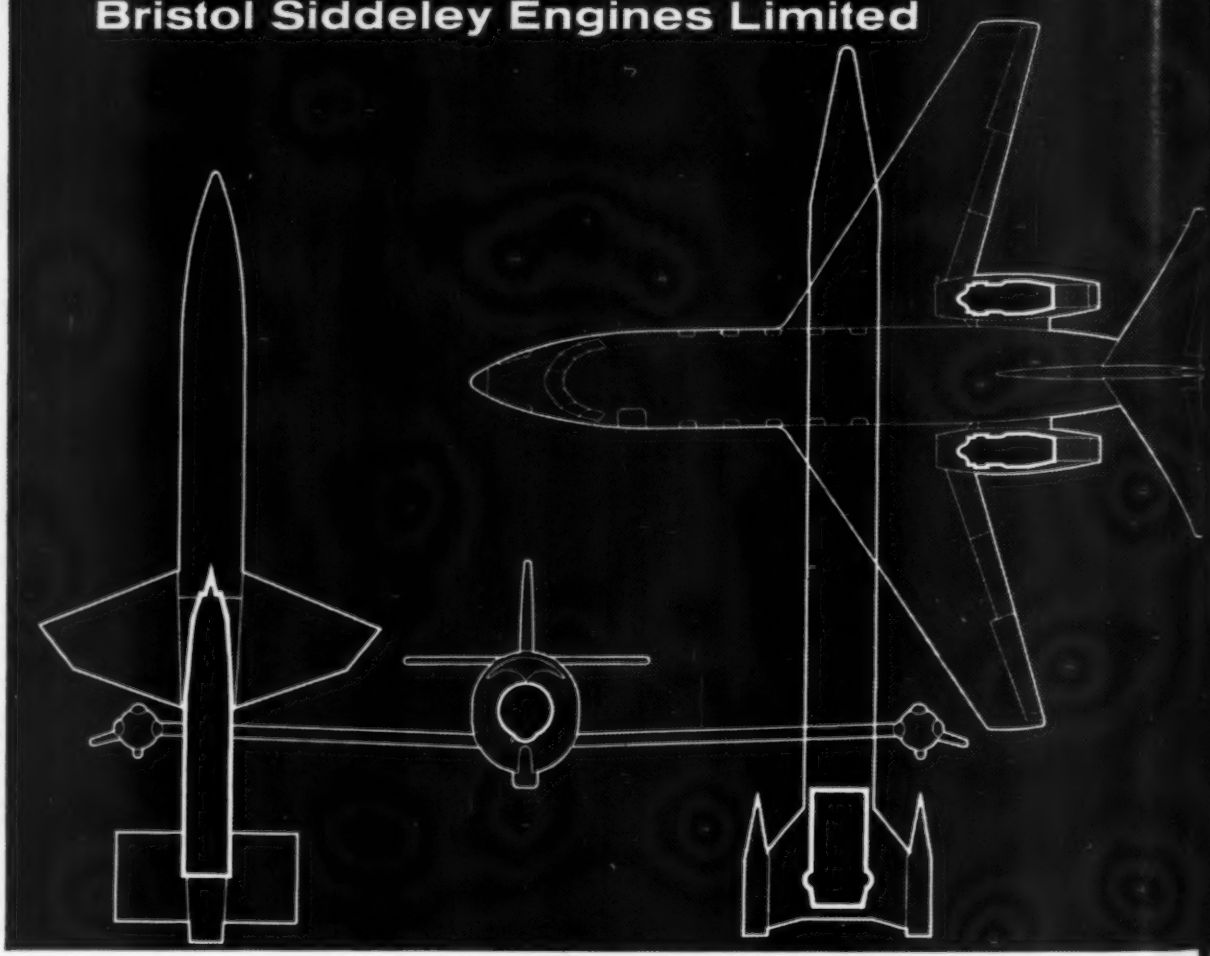
• **Automatic acquistion**—A necessity, Collins feels, for any Doppler. The DN-101 provides it by use of three tracking discriminators (one for each beam) to lock on to the Doppler shift.

• **Test equipment**—Must be available for both ramp check and bench test. Collins has developed a Doppler discriminator tracker and a microwave simulator for bench check and a radar system simulator for ramp check purpose.

Companion to the DN-101 is Collins' NC-103 Doppler navigation computer system. Is is designed to process Doppler information and compass input data to display to the pilot both the distance to go "along track" and "cross track" distance perpendicular to his selected track.

# BRAIN POWER

## Bristol Siddeley Engines Limited



**THE CHALLENGE.** The changing face of aviation demands further development of established powerplants; demands design of new forms of power; demands the right engine at the right time in the right quantity.

**ANSWERED BY A GREAT NEW ALLIANCE** Bristol Siddeley Engines Limited allies the minds, skills, resources of Bristol Aero-Engines and Armstrong Siddeley Motors to form a new giant of immense capability, immediately equipped for a dominant role in world aviation.

Already Bristol Siddeley presents a great range of powerplants, extending over the whole field—turbojets, jet-props, ramjets, rocket motors, piston engines. All outstanding in design and performance, developed and produced by the partner companies individually.

It has factories equipped with the most modern machinery to implement modern production methods, and a highly skilled labour force maintained through its own advanced apprentice training schools.

More important—Bristol Siddeley possesses a vast complex of test plants which can simulate *now* the extreme conditions of flight in the future.

And behind all these resources stands the most vital: the research, design and development brain power that will keep Bristol Siddeley ahead in answering the challenge of modern aviation.

**Famous Bristol Siddeley Engines:—**

ARMSTRONG SIDDELEY SAPPHIRE—turbojet . . . high subsonic and supersonic speeds . . . powerplant of the Javelin all-weather interceptor and the Handley Page Victor bomber.

BRISTOL PROTEUS—most powerful jet-prop in airline service . . . remarkable mechanical excellence and exceptional reliability . . . in the Bristol Britannia.

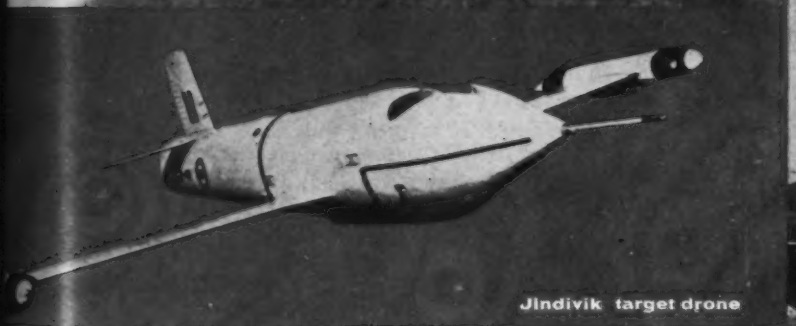
ARMSTRONG SIDDELEY VIPER—turbojet . . . exceptional handling qualities . . . powers the Hunting Percival Jet Provost, RAF's basic jet trainer, and the Jindivik pilotless target aircraft.

BRISTOL ORPHEUS—leading lightweight medium-thrust turbo-

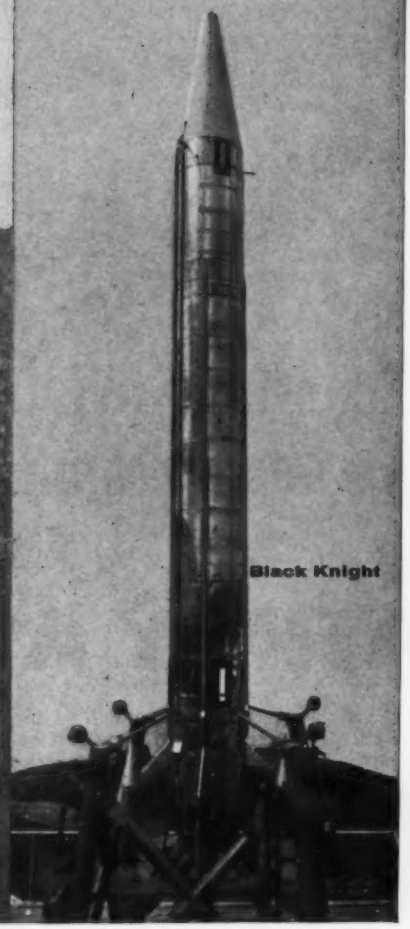
# FLIGHT POWER

Lockheed Jetstar

Bristol/Ferranti Bloodhound



Jindivik target drone



Black Knight

...already specified in 8 countries for 14 different aircraft including the outstanding Lockheed Jetstar.

ARMSTRONG SIDDELEY SINGLE MAMBA—jet-prop . . . stressed for naval operations such as deck landing and catapulting . . . installed in the Short Seamew.

BRISTOL T[I]OR—a fully developed ramjet engine . . . powers the Bristol/Ferranti Bloodhound guided missile system, chosen as Britain's major air defence weapon, ordered by Sweden.

ARMSTRONG SIDDELEY ROCKET MOTORS—developed and produced as the power unit of the successful Black Knight research rocket.

BRISTOL OLYMPUS—turbojet . . . remarkable for great power at high altitude and very low fuel consumption . . . powerplant of the Avro Vulcan bomber.

ARMSTRONG SIDDELEY DOUBLE MAMBA—jet-prop . . . virtually twin-engined reliability for long oversea reconnaissance duties . . . powers the Fairey Gannet.

BRISTOL CENTAURUS AND HERCULES—two radial piston engines, with Bristol-pioneered sleeve-valves . . . renowned for their reliability and long overhaul life.

ARMSTRONG SIDDELEY P181, P182—turboshafts . . . remarkably compact for power developed . . . P181 designed for helicopters, P182 for fixed-wing aircraft.

**Bristol Siddeley**

ENGINES LIMITED

***BRAIN POWER translated into FLIGHT POWER***


# ARMY AVIATION ISSUE

Fast growing Army Aviation will be the subject of the special March 9 issue of American Aviation. Here's an unusual opportunity for you to tell the story of your capabilities and products to men who will read this valuable issue from cover to cover and keep it because they purchase, manufacture, or subcontract for ARMY Aviation . . . in addition to all the regular readers who need information about this major segment of the aviation market.

The success of the first Army Aviation issue was proved in 1958, by such comments as—

"This excellent issue provides a most valuable handbook on the subject and as complete and informative a discussion of it as I have yet seen."

Major General H. P. Storke
Chief of Information

"On behalf of the Army aviators, I wish to express my appreciation for the complete factual coverage . . . . . "

Brigadier General Ernest F. Easterbrook
Director, Army Aviation

The Second Annual Army Aviation Issue, prepared with the full support and cooperation of the Department of the Army, will contain vital editorial material not available elsewhere . . . features such as "The Army Aviation Budget," "What's Ahead for Army Aviation," "Inventory of Army Aircraft," "Who's Who in Army Aviation" (with organizational charts), "Electronics in Army Aviation" plus many others, including reports of European Army Aviation in action.

Advertise where you know you will have the concentrated attention of Army Aviation buying influences . . . in the March 9 Second Annual Army Aviation issue of American Aviation. For additional information, contact the American Aviation Regional Advertising Manager nearest you.

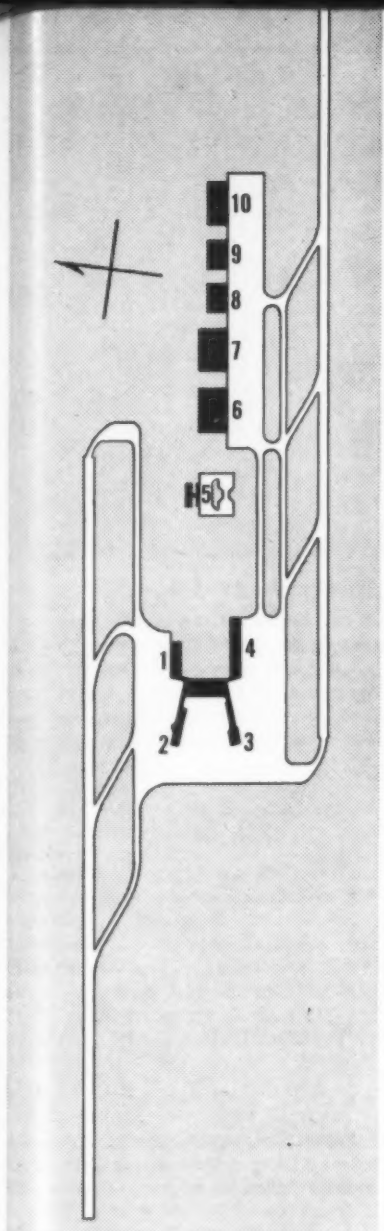
NEW YORK: 17 EAST 48TH STREET—PLAZA 3-1100 • CHICAGO: 139 N. CLARK STREET—CENTRAL 6-5804 • WEST COAST: 8929 WILSHIRE BLVD., BEVERLY HILLS, CALIF.—OLEANDER 5-9161 • CLEVELAND: 1422 EUCLID AVENUE—PROSPECT 1-2420 • DETROIT: 201 STEPHENSON BLDG.—TRINITY 5-2555 • FLORIDA: 208 ALMERIA AVENUE, CORAL GABLES, FLA.—HIGHLAND 4-8326 • PARIS: 11 RUE CONDORCET, PARIS (9E) FRANCE—TEL: TRU 15-39 • GENEVA: 10 RUE GRENUS, GENEVA, SWITZERLAND—TEL: 321044 • TORONTO: ALLIN ASSOCIATES, 12 RICHMOND STREET, EAST, TORONTO, CANADA—EMPIRE 4-2001 • MONTREAL: ALLIN ASSOCIATES, 1487 MOUNTAIN STREET, MONTREAL, CANADA—VICTOR 5-6898

# AMERICAN AVIATION

**AMERICAN AVIATION PUBLICATIONS, INC.**

**World's Largest Aviation Publishers**

1001 Vermont Avenue, N. W. • Washington 5, D. C.




## Readying for Jets

### Caracas plans facility to handle the newest, biggest

Caracas' Maiquetia Airport in Venezuela expects no jet problem. Preliminary plans, recently approved, to adapt the airport for the jet age call for two 10,500-ft. long and 150-ft. wide runways capable of taking all models of the 707 and DC-8 under the most unfavorable local meteorological conditions of zero wind and 41°F. Separation between the runways will be 3,300 ft., permitting high operation capacity with simultaneous landings and takeoffs. With easterly winds prevailing 80% of the time, landings, for the most part, will be carried on the northern runway and takeoffs on the southern runway. During westerly winds, runway use will be reversed.

The terminal complex includes (1) an administration building, (2) national passenger terminal, (3) international passenger terminal, (4) air express/cargo terminal, (5) helicopter terminal, and the following individual airline terminals (6) Lav, (7) Avensa, (8) RANSA, (9) Creole, and (10) miscellaneous. The high, flat terrain of the terminal area provides certain advantages which are being effectively utilized. The high ground makes it possible to slope aprons down away from the buildings, thus helping to brake and start planes, while the flatness of the ground permits separation of vehicular traffic in two levels. Access to the central portion of the terminal area will be through a tunnel under the south runway and hangar area.

## Washington Terminal-Hotel Will Be Completed in 1960

A multi-million dollar airlines terminal-hotel-parking garage-office building-and heliport development is planned for downtown Washington, D.C. The project is being undertaken by a group headed by Towers Associates of Seneca Falls, N.Y. Site of the proposed development is a square block approximately two blocks distant from the Union Station. Construction, according to present plans, is expected to be completed in 1960.

The airlines terminal is being planned to handle all incoming and outgoing passengers requiring ground transportation to and from Washington National, Baltimore's Friendship and the new Washington International Airport now under construction at Chantilly, Va. It would be equipped to handle three million passengers annually. Helicopter service would be available additionally to and from the airports.

## Federal Aid Funds Backlog Reaches $85 Million Record

Over $85 million in federal aid airport funds remained unobligated at the beginning of last month. These are funds that have been tentatively allocated or earmarked for some 457 projects in continental United States and Territories under the federal aid program, but which may be lost to communities sponsoring the projects unless they meet their respective deadlines for filing of necessary project applications.

Millions of dollars of badly needed airport aid funds have been tied up in the past because local sponsors, in many instances, haven't completed projects once assured that if, as and when they were ready, federal funds would be waiting for them. In consequence, many other communities in the various states were being deprived of sums that otherwise might have been available to them.

To meet the problem, the Civil Aeronautics Administration about a year ago decided to establish deadlines for project applications. These deadlines, running through next June when the present aid program expires, are being strictly enforced. Any funds remaining unobligated at that time will be recaptured, re-apportioned and made available for other projects.

### . . . Airport Briefs

• **Kellogg Field,** Battle Creek, Mich., is having difficulty in obtaining an operator for its still unopened restaurant in the new terminal building, dedicated Dec. 4. Prospective operators have taken a dim view of the monthly minimum guarantee plus a percentage of gross sales which the city is asking.

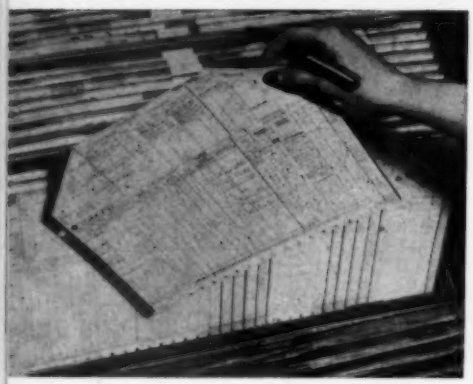
• **Oakland (Calif.)** Board of Port Commissioners has awarded a 50-year lease for construction of a $1.5 million luxury motor hotel at the entrance to Metropolitan Oakland International Airport.

• **Port of New York Authority** received a citation from the Municipal Art Society of New York for the "inspired planning" of the $30-million International Arrival and Airline Wing Building at New York International Airport.

• **At Littleton, Colo.,** construction began this month on a new general aviation airport to be known as Columbine Airport. It will provide hangar space for over 200 light aircraft in the Denver area.

• **Friendship International Airport,** Baltimore, Md., reported air carrier movements down 35% in November from the same month last year as a consequence of airline strikes. Passenger traffic was down 19%.

• **Addis Ababa,** capital of Ethiopia, will have a completely new airport. The project is being undertaken by the Imperial Ethiopian Government as part of an expanded international airport program.



## Record System Halves Cost, Triples Operating Speed

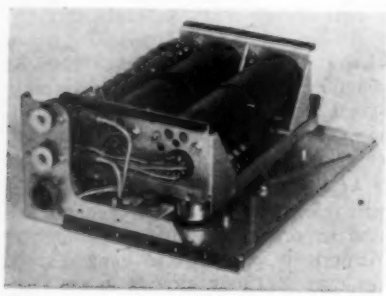
VISIrecord, Inc. has helped Republic Aviation, Long Island, N. Y., halve the payroll and triple the operating speed of its accounting inventory records department.

Republic made these savings by installing an inventory-control system on the "visible vertical" principle of record keeping.

The right-hand margin of each VISIrecord remains visible at all times, permitting quick and easy scanning of balances on hand within each complete row without touching a single record.

Instead of housing records of its 10,000 spare parts on file cards in separate cabinets, Republic now places over 2,000 records within reach of any of six seated operators.

Circle No. 76 on Reader Service Card.



## True Airspeed Indicator

**Honeywell Regulator Co. has designed a new, lightweight true airspeed computer that is completely transistorized. Designated HG 45, the computer uses 10 watts of power and has a maximum limit of 750 kts and 55,000 ft. altitude. Temperature range is –65F to 170F. Its accuracy, depending on flight envelope is 1% or less. Weight, complete with shock mounts, is 4.2 lbs., and volume is less than 0.2 cu. ft. It meets MIL-E-5400B requirements.**

Circle No. 77 on Reader Service Card

## Portable Noise Suppressor for Jets

**Industrial Acoustics Corp. has developed a new commercial jet engine noise suppressor. Designed specifically for ground run-up operations, the device is attached directly to the engine, assuring alignment of engine nozzle and suppressor. The attachment eliminates need for trailer or other support equipment for every engine. Called Series "CDA", this unit matches the configuration of the commercial in-flight suppressor nozzle. IAC says this matching feature assures maximum acoustical performance.**

Circle No. 78 on Reader Service Card.

## . . . Product Briefs

• **Precise measurements**—Designed to measure distances in the 0 to 45,000 micro-inches range, the Electronic Micrometer, Type B-721, does not require physical contact. Accuracy is said to be within 1%. Measurement is by a transformer coupled bridge in conjunction with a noncontacting probe. Distance is measured by capacitance change between probe and test surface. Manufactured by Wayne Kerr Corp., Philadelphia, it is well suited for measurements on rotating objects, and for monitoring distance with reference to a predetermined value. Because there is no contact, accurate determinations of strength properties are possible on fragile samples.

Circle No. 79 on Reader Service Card.

• **Servo multiplier**—Industrial Control Corp. offers a high performance miniaturized servo multiplier driven by d-c data. Called the SL-1024, it consists of a servo loop that positions a shaft to follow a plus or minus d-c signal, and has a multi-section potentiometer for computation. It uses a high reliability transistor-magnetic amplifier, with all circuits sealed. Typical output signals are within plus or minus 100v d-c, with static error under 0.25% and full-scale travel within 0.5 sec. The SL-1024 requires 117v, at a frequency of 400cps.

Circle No. 80 on Reader Service Card.

• **Eonic, Inc.,** Detroit, Mich. has produced a cam, shaft and straight spur gear out of a single piece of stock. The metal is 440-F Stainless. Open space between cam and gear is .065 in. There are 225 teeth in the gear, dia., 211/32 in. pitch 96. Tooth-to-tooth tolerance is .0002 in.

Circle No. 81 on Reader Service Card.

• **Purer chromium**—Chromalloy Corp. is marketing a new super-pure chromium. Called Iochrome, it reportedly contains no single metallic or gaseous impurity in quantities over 10 parts per million. It is produced by means of an iodide decomposition process. Iochrome increases the ductility of chromium, thus eliminating the factor which has limited its use in high-temperature alloys. In room temperature tensile tests on wrought material from an arc-cast Iochrome ingot, 44% elongation, and 78% reduction in area have been obtained.

Circle No. 82 on Reader Service Card.

• **Ice prevention**—Tropical Paint Co., Cleveland, O. has developed an agent to prevent ice accumulation and melt ice already formed on ramps. Its melting rate is said to be 20 times that of the most common agent at zero with effectiveness to 30 below.

Circle No. 83 on Reader Service Card.

## —PEOPLE

### People on the move in . . .

#### . . . Transport

**John C. Pirie,** associate general counsel for Pan American World Airways, was elected a vice president of the company, Juan T. Trippe, president, has announced. Pirie will retain his present duties and will have the title of vice president and associate general counsel.

**Stanley W. Burke, Jr.** has been named director in Nicaragua with headquarters in Managua by Pan American World Airways. He has been affiliated with Pan Am since 1946.

**R. E. McKaughan,** president and founder of Trans-Texas Airways, has been elected to the Board of Directors of the Air Transport Association.

#### . . . Manufacturing/Military

**Hugh K. Stevenson's** appointment as executive vice president of Aircraft Service Inc. has been announced by the Cleveland firm.

**Raymond C. Blaylock,** vice president-engineering, and **Gifford K. Johnson,** vice president-production, are new members elected to the board of directors of Chance Vought Aircraft.

**Gordon Banerian,** manager of Aerojet-General's Turbo-Machinery division, will serve as chairman of the NASA's Research Advisory Committee on Mechanical Power Plant Systems.

**James A. Montllor** was recently appointed vice president of Essex Electronics.

**Richard B. Fuller,** formerly with Thompson-Ramo-Wooldridge, has joined Stanley Aviation Corp. as director of purchases.

**Dunstan Graham,** eastern operations manager for Lear, Inc., has been appointed head of the company's new Systems Management Office with offices in Santa Monica.

**Edmund A. Schreiber** succeeds Harlan E. Eastman as purchasing agent for the Helipot Division of Beckman Instruments, Inc. Eastman was recently named corporate purchasing administrator.

**Francis S. Napoli** has been appointed vice president-manufacturing of Dumont Aviation Associates and general manager of Du-Air Corp., a Dumont affiliate.

**Ralph W. Barnes** formerly sales manager, is the new president of Fluid Regulators Corp.

**Winston C. Fournier** joins Texas Instruments Corp. as press relations manager.

**Robert C. Ward,** formerly a Washington representative for the Wright Aeronautical division of Curtiss-Wright, is now Washington representative for the corporation's Propeller division.

**Correction:** D. H. Hollowell, vice-president-sales & service of Continental Motors Aircraft Division succeeded Francis L. Hine, president of Airwork Corp. as president of Aircraft Distributors and Manufacturers Assn., not as president of Airwork (A/A, Dec. 1, p. 39).

## —INTERNATIONAL REPORT

**By Anthony Vandyk**

In the traffic field IATA has strict rules and regulations and any airline which breaks them can be disciplined by the imposition of a fine. Would it be possible for IATA to draft resolutions laying down minimum operational and maintenance standards which could be enforced in the same way that the traffic resolutions are enforced? This is certainly a matter that could be given some thought by the IATA Technical Committee. For today the whole industry suffers when an aircraft crashes due to substandard maintenance or operational procedures. Thus it seems to be an industry task, through its trade association, to police its members. Certainly, governments, although rendering lip service to ICAO recommendations, have failed to achieve anything to approach general implementation of the standards recommended by that international governmental organization.

• **Hosteling SAS**—Scandinavian Airlines System is now in the hotel business. A subsidiary company—SAS Invest Inc.—is building a combined hotel and air terminal in Copenhagen at a cost of some $4,300,000. The terminal building will contain SAS's Copenhagen offices, reservation center, ticket office and passenger terminal. On top of the terminal will be the Royal Hotel, a de luxe establishment with 275 rooms. The terminal building is virtually complete while the hotel will open in 1960.

• **Keeps getting better**—The service offered by non-IATA carriers between the U.S. and South America continues to improve. Recently it has become possible to travel by one-plane DC-6C service from Miami to Buenos Aires for $251. The IATA one-way tourist fare is $412. Three carriers, none U.S. or Argentine, combine to provide this low-cost service between the U.S. and Argentina—TAN of Honduras, Compania Ecuatoriana de Aviacion of Ecuador and Aerolineas Peruanas of Peru. Although the two latter airlines are seen by IATA competitors as paper organizations, they are legally established as companies in Ecuador and Peru. They do not actually own any aircraft—but it is no crime to operate leased equipment. Thus the interchange arrangement between the three carriers violates no law. And by using three flags traffic rights can be obtained in countries where a single carrier might have difficulty in obtaining rights.

• **Victory for Ziegler**—Breguet's achievement in winning the NATO patrol bomber contest marks another victory for Henri Ziegler, one of the key men on the European aviation scene. Mild-mannered 52-year-old Ziegler is one of the few men who have held top positions in government, airline and aircraft manufacturing activities. He was president of Air France from 1948 to 1954 and then moved to the French Civil Aviation Department where he was inspector-general before assuming the presidency of the Breguet company. Both a pilot and an engineer, Ziegler, prior to the war, headed up the French Flight Test Center. When he joined Breguet that company was more concerned with looking back at its past achievements and honoring the name of its founder, Louis Breguet, than planning for the future. Today, largely thanks to Ziegler, Breguet is once again a leading member of the European aircraft manufacturing community.

• **Alouettes to the rescue**—Helicopters are in the news in the Netherlands. The Dutch Air Force plans to buy sufficient Alouettes from Sud Aviation to make available two at each of its air bases for rescue and fire-fighting duties. Because a turbine-powered helicopter requires almost no warm-up time, it is superior for missions of these types to piston-engine models. Second helicopter news item from the Netherlands is that a company called Aero Contractors has applied for government permission to operate domestic services. President B. A. M. Schreiner is convinced that his company will get the green light and has lined up Vertol equipment to start operating next spring. Although an initial loss is expected, Schreiner is convinced that with the advent of turbine-powered helicopters the operation will become profitable.

## Sud SE 118 Diplomate Has 1,240-Mile Range

Europe is gradually waking up to the executive aircraft market. Sud Aviation has started work on a model called the Diplomate powered by two Turbomeca Bastan turboprops. Actually, a derivative of the Voltigeur military attack aircraft, the new model will carry 8 to 10 passengers and a crew of 2 at a cruise speed of over 310 mph over a range of more than 1,240 miles. Takeoff and landing performance will be exceptionally good. The Bastan engine is currently being tested on a Beech 18 flying test bed. About 65% of the components for the Diplomate will be identical to those used in the Voltigeur. This should enable the price to be kept down but so far Sud Aviation has kept quiet on this subject.

## Transland Tooling Up for Production of Ag Plane

Transland Aircraft Div. of Hi-Shear Rivet Tool Co., Torrance, Calif., has tooled up for production of its all-metal, low-wing Ag-2.

Designed to carry heavy loads, the farm and forestry airplane has two separate systems for solids and liquids which can be controlled independently or simultaneously by the pilot.

For solid systems, the 53-cu. ft. hopper will hold 2,000 lbs. of low density solids such as fire retardant chemicals and is an integral part of the fuselage. For liquid systems, four spray tanks with a combined capacity of 250 gal. are located in the inner portion of the wings.

Powered by a 600-hp Pratt & Whitney R1340 engine, the Ag-2 is priced at $25,000 for the duster/-sprayer version.

Optional equipment provided on request includes turn and bank indicator, stall warning indicator, landing lights and external power receptacle.

## California Will Try Again For Compulsory Insurance

California Aeronautics Commission is making another try to require that private aircraft operators carry public liability or property damage insurance. The proposal has been referred to the state legislative interim committee. California law requires such coverage of automobile owners, but measures to require similar financial responsibility of private plane owners have been defeated on at least two occasions.

Also referred to the interim committee was a proposal for an in-lieu tax on aircraft and the question of legislation to protect fliers against indiscriminate construction of high radio or television towers. While towers can be controlled in air lanes or in the vicinity of airports, there is no provision for control—particularly of receiving towers—in areas used by general aviation.

## . . . Business Flying Briefs

• **Lycoming Div.** of Avco Mfg. Co. has received an order from Piper Aircraft Corp. for more than 1,000 piston engines valued at $2,254,000. Order covers 160-250 hp engines which will power the Tri-Pacer, Comanche and Apache aircraft.

• **Tactair, Inc.** has developed for Cessna Aircraft Co. a new low-cost automatic flight system, known as the Levelair. Cessna will offer two versions of the system as optional equipment on its models 175, 180, 182 and Skylane.

• **Doyne Aircraft, Inc.,** Wichita, Kan. has designed fiberglass wheel fairings for the Piper PA-22 Tri-Pacer. Speed is said to be increased by 5 to 7 mph, depending on the year model.

• **Met-Co-Aire,** Fullerton, Calif., has fitted a Cessna 140A with a tricycle landing gear and will make conversion kits available for 120s and 140s as soon as CAA approval is received.

• **Colonial Aircraft Corp.,** Sanford, Me., manufacturers of the Skimmer IV amphibian, has disassociated itself from Amphibious Aircraft, Inc.—former exclusive sales outlet. All sales activities are now directed from the factory.

• **The Umbaugh Aircraft Corp.,** Ocala, Fla. is reported to have contracted with Colonial Aircraft Corp., Sanford, Me. for 1,000 Umbaugh Model 18 giroplanes. The two-place rotary-wing aircraft with a free spinning rotor is designed to sell for $9,995.

• **Frederick B. Ayer & Associates, Inc.** which recently purchased a large number of American Airlines' Convair 240s, is furnishing a comprehensive "log book" on the Convair Executive Ayer-Liner to prospective operators. Fully custom converted model is available for $385,000 or the commercial Ayer-Liner for $250,000.

• **Cessna** delivered its first two Model 150s to State College Flying Service, Pa. The two-place aircraft will be used for Air Force ROTC flight training at Pennsylvania State College.


## Piper Adds PA-25 to Aircraft Line

Piper Aircraft Corp. has announced the addition of an agricultural airplane—designated PA-25 Pawnee—to its line. It is the first model to come out of Piper's new development center at Vero Beach, Fla.

Powered by a 150-hp Lycoming, the Pawnee has a gross weight of 2,300 lbs., carries a useful load of 1,100 lbs. and has a hopper capacity of 110 gal. or 20 cu. ft. The hopper can be used for dispensing either liquid or dry chemicals.

Production is scheduled to get under way at the Lockhaven plant early next year but will be limited to a service evaluation quantity until tooling is completed.

**Two cents on each dollar of sales was the domestic trunklines' profit margin this year.** Seven years ago, the margin was seven cents. Fares haven't gone up enough, but costs continue to spiral. Example: price of airplanes has increased from $6 a pound to $42 since 1938.

**Slight dip in traffic was shown by trunklines during November,** a month marred by strikes. Passenger-miles were off less than 1% from same month last year, totaling 1.78 billion. Load factor was 61.38% against 55.28% last year, but available seat-miles were only 2.9 billion against 3.24 billion.

**Southern transcontinental route case will be long and drawn out.** Hearings won't start until some time next year, will be bitterly fought. Said CAB recently: "Several years will necessarily elapse before a final decision."

**A new airpline has produced new business, says West Coast Airlines,** first carrier to fly the Fairchild F-27. In October, first full month of F-27 operation, passenger-miles increased more than 12%, reversing downward trend that had averaged 4.15% each month for previous six months. Average distance flown per passenger was 200 miles, against 180 in same 1957 month. Passengers carried in November were up 12% from last year. F-27 load factor was 62%, DC-3 averaged 51%.

**Major financing plan is being worked out by Capital Airlines, to pay for Convair 880s** (nine on order, six optioned). Plan is said to include long-term money from insurance companies, bank credit, short-term funds, new equity financing. Capital, incidentally, will get the intercontinental version of the Convair 880, which has higher gross weight than basic model. However, Capital's planes won't have increased fuel capacity that's been ordered by other buyers of intercontinental model.

**Can CAB make its "use it or lose it" policy stick?** Board says it will knock off local service towns that don't produce business. But there'll be lots of political heat to retain small stops even though traffic is very light.

**Look for at least one utility jet in Federal Aviation Agency's budget** for fiscal 1960. Reason: B-57s loaned to CAA by USAF are unwieldly for role of flight inspection of navaids.

**Service test is under way by Continental Air Lines of "Euphorian" passenger seat** developed by North American Aviation's subsidiary NaVan Products. They have been installed in a DC-7B for customer reaction.

**Decision by the U.S. to turn down Belgium's second request** for additional air traffic rights in this country has some airline observers puzzled. A delegation headed by M. P. de Smet, chief of of the legal and air transport branch of the Belgium Ministry of Communications, got nowhere earlier this month in negotiations in Washington. Yet Belgium is almost alone among countries with international airlines in being restricted to only one U.S. point—New York.

**New Soviet seven-year plan gives only brief mention to civil aviation,** but it does point out ominously that "the international importance of the plan . . . will mean a further increase in the strength of the world system of socialism." For Soviet citizens, the plan promises that "air transport, with the introduction of high-speed, multi-seat turbojet and turboprop aircraft, will become one of the principal means of passenger travel and will increase about sixfold during the next seven years."

## AIRPORT/AIRWAYS AIRTRENDS

An American Aviation/Aviation Daily Staff Report

**Air Coordinating Committee will be absorbed within the FAA framework.** Official announcement is expected with shift of ACC staff from Commerce quarters to Washington FAA headquarters at 1711 New York Ave., N.W., the first of the New Year.

**Facts and figures on airports are sadly lacking.** In the belief that airport statistics form an integral part of the global international air transport picture, ICAO has moved for improvement. Secretariat of the International Civil Aviation Organization will seek to standardize terms used and to prepare a reporting form to assure completeness of filing airport data.

**Biggest problem in large jet terminal operations** is lack of cross-wind runways of sufficient length to handle the turbine aircraft.

**Airports with new local service aren't immune from CAB's "use it or lose it"** policy. After the first six months following an award they will be on one year's probation to generate a minimum of five passengers per flight.

**Only seven airports will be ready for "full" jet operations by 1960,** according to Senator Monroney. He lists: Los Angeles International, New York International, and San Francisco International, Tulsa, Boston's Logan, Baltimore's Friendship, and Detroit Metropolitan.

**January 8 will be the kick-off date of a mammoth, nationwide air traffic survey.** Purpose is to provide a precise yardstick to measure and forecast air traffic flow for establishing continuing needs of the country's air traffic control and navigation systems. Announced earlier this year, the study is being undertaken by Chicago consultants Booz, Allen and Hamilton under contract with FAA's Research and Development Bureau. All segments of civil and military aviation will be drafted to aid in the survey. Covered in the survey, which will run through the summer of 1959, will be some 600 airports in 36 states.

**FAA chief Quesada will be in a tough spot** if Administration insists on airport aid cuts. Already viewed with apprehension by civil aviation because of his military background, Quesada could be saddled with the handicap of having to support an emasculated airports bill in opposition to every segment of civil aviation.

**Restricted airspace allocations are slated for review.** FAA/military airspace review teams will go into the field early next year to inventory use of restricted areas. Findings will be submitted to appropriate Regional Airspace Subcommittees for review. Industry representatives will be given opportunity to participate in the consideration of changing airspace needs and requirements.

**Industry wants to ban "quick-fixes" of airspace problems.** In a letter to CAA Administrator Pyle and FAA Administrator Quesada, seven organizations representing the airlines, general aviation, state and local aviation and airport officials and pilot groups joined in urging an end to the "piecemeal" consideration of military requests for segregated airspace. Their recommendation: Consolidation of individual base requirements on an "area" basis.

**Satellites may provide the navigation systems of the future.** This ultimate development for aircraft, ships at sea, and finally space craft was projected by Advanced Research Projects Chief Roy Johnson, among other potential areas of space research.

EXCLUSIVE

# Soviet Aviation: It's *Different*

By Wayne W. Parrish

The six non-Communist airlines now flying to Moscow have had to learn the hard way that doing business in the Soviet Union is different. Much different.

In every conversation I had with western airline people in Moscow one word kept cropping up. The individual would be groping for an expression but would always end up with "Well, it's just different, that's all—it's *different*."

The Russian airline, Aeroflot, has had to adjust to the West wherever it flies into other capitals, but by all odds the adjustment from West to East was much sharper.

But there is a gradual thaw in Moscow and the reason for the thaw is that if international air transportation is to grow between East and West, the Russians in the long run will have to adopt most of the procedures and outlook of the West. They've been doing so rapidly outside of the Soviet Union and are beginning to do so inside.

Even so it's a frustrating job trying to operate into Moscow. Very frustrating indeed. The rules are all different.

Take a simple matter like office space. There isn't any. Four of the six airlines—SAS, KLM, Sabena and Air France—have hotel rooms that serve as offices. It is even against the rules to have a sign on the hotel room door, although the rule is now being ignored out of practical necessity.

Two of the carriers—Finnair and Air India—have personnel based and housed at the airport, principally for station manager purposes.

The Soviet government has promised suitable office space for a long time, but nothing has been forthcoming. And if you know Moscow you can see why. There are no private office buildings with space to let. Every building is owned and controlled by some government department. There just isn't any setup in the Soviet scheme of things for offices to outsiders except in the general Intourist complex, Intourist being the overall government agency handling all foreigners and travel.

SAS was the first foreign airline to serve Moscow. It took a room in the National Hotel, probably the prize location. Sabena and Air France are in the Metropole, another Intourist hotel in a central location in the city. American Express also has a room there, serving as an office. KLM, arriving later than the others, has an office-room in the Leningradska Hotel, somewhat out of the main swim.

*Photos by Wayne W. Parrish*

**MAIN LOBBY of Vnukovo Airport, Moscow, showing Aeroflot route system, with departure board below. Thirty-three flights were scheduled to depart between 5:40 p.m. and 7:05 a.m. Domestic section is to left of main lobby, international to right.**

Where do the airline men live? You don't pick up a newspaper in Moscow and look in the classified section for apartments to let. Nor do you contact a real estate firm—there isn't any such thing. You apply through a government ministry and wait. In due course you get accommodations assigned to you, but there is no such thing as a really good apartment, they are all second-rate by Western standards.

Meantime, of course, you can stay at an Intourist hotel, which runs into money after awhile, or at another hotel where Intourist has some sort of exchange deal for rooms. And there are rooms in buildings at the airport. The Finnair man, the SAS station manager, and other Western operating personnel stay at the airport. And it's a very lonely life out there.

And what does the Moscow manager do? He can't issue or sell tickets, he can't solicit business, he just uses his office as a sort of information center and tries to keep his home office informed on what's going on. There isn't even such a thing as a telephone directory for Moscow—you make up your own as you go along.

All ticketing and everything else is handled in Moscow by Aeroflot, which has a ticket office on the street floor of the Metropole Hotel. A Westerner arriving in Moscow with a return ticket on SAS, for example, is booked on SAS for the return. Westerners generally can and do express preference for a carrier. But Russians—and there is quite a bit of this business—are assigned by Aeroflot. In actual practice Aeroflot has been very fair in sharing Russian traffic with the non-Communist carriers.

Since no Russian can travel except by government order and permission, and Russians simply aren't allowed out of the country as tourists except in well-organized tours, there would be no percentage in the Western airlines trying to drum up sales among the general

**INTERIOR of main cabin of 95-passenger IL-18 turboprop, showing five-abreast seating in tourist version.**

population even if such an effort were permitted. But the Soviet Union is sending out a lot of people these days—delegations, technicians, attaches, couriers, and, of course, agents. Much of this is long-haul traffic. The Western airlines like to get it.

Advertising? Window displays? Well, in the Soviet Union everything is "different." There is no newspaper advertising available to Western airlines, although there has been a notable uplift in Aeroflot advertising in the form of posters, primarily for domestic purposes to lure people off the overtaxed railroads.

As for window displays, there is exactly one window in all of the vast geographical area of the U.S.S.R. available for an airline display. This is a street-level window in the Metropole Hotel, and the display must be shared with Aeroflot. It is an amazing system.

Every two months Aeroflot permits another carrier to share the window. With six carriers now flying to Moscow, this means that SAS, for example, has the window once a year for a two-month period, that is to say, half a window. And Aeroflot is mighty particular about what goes into that window.

Sabena had a great idea for its two-month period, for example. It shipped to Moscow a very fancy cutaway model of the Boeing 707, king size. This would indeed be a sensation. But when the time came for installing, the Aeroflot people asked Sabena if it were flying the 707. No, said Sabena, but we will be flying the 707 late in 1959. Okay, said Aeroflot, when you fly the 707 we'll consider using the model. Until then, nyet! So a fine Sabena idea went down the drain.

But it is interesting to see how this one, tiny Western showcase attracts attention in Moscow. I never passed the place when there wasn't a crowd around reading the placards (all in Russian, of course) and looking at the timetables and whatever else was available for the somewhat ordinary and cluttered display.

In the West, Aeroflot and Intourist can (and do) rent office space, advertise, and otherwise conduct business like everybody else. There are slight signs that the Soviet Union is beginning to thaw here and there in giving Western carriers more visibility. If air business continues to grow, it will have to break down to some extent. At the moment it's all pretty weird—and frustrating.

On the operating side there are plenty of headaches. Aeroflot does all of the turnarounds but its procedures are cumbersome and slow. At first the Aeroflot people would take no notice of Western suggestions, but bit by bit they're learning that the Western carriers are far ahead of the Soviet Union in operating procedures.

"They know all the answers," one Western airline man told me. "Me, I've been in the business only twenty years. I don't know all the answers. But you can't tell these people anything. They always have an answer even when they don't know. But they're learning the hard way. They're even beginning to see that our way is better."

Take the matter of gas. The highest octane Russian gas is 108-135. But the Sabena DC-7C needs 115-145 and the Russians have promised it month after month without the slightest evidence that they can produce it. To a Russian, nothing is impossible. Of course they have it—and they can make it! No Russian would ever admit to failure about anything. But the bald fact of the matter is that there is no high octane fuel available—only promises.

**LEO SVJATUSHENKO, manager of the international section of Moscow airport, and Arnold Jensen, SAS station manager snapped on apron with Sabena DC-7C in background.**

So Sabena flies Brussels-Moscow, 1,200 miles, with enough fuel to return. In case of winds, it can stop at Copenhagen on the return trip to refuel.

Other carriers use the available Russian gas. Finnair flies Convairs, SAS and KLM, DC-6Bs, and Air France and Air India, Super Constellations. BEA is hoping to inaugurate service one of these days, using Viscounts, but how it will solve the fuel problem isn't known unless the Viscount can use the same kerosene used by the new Aeroflot turboprops.

Mechanicals? If you have a major one, you've had it. Up to now, there has been only one. Air India, which has been building up an excellent reputation as an international carrier, had some really tough luck early in the fall shortly after it inaugurated service to Moscow. It lost an engine after takeoff from Moscow and the Russian gas probably contributed to that one. In any case, Moscow is an awfully long way from the Air India base in Bombay.

So it made arrangements to fly an engine on Indian Airlines Corporation, the domestic airline, to Kabul, Afghanistan, where it would be picked up by Aeroflot and flown to Moscow. The engine got to Kabul okay, but Aeroflot couldn't get it through the door of its twin-engined IL-14. So there the engine sat in Kabul.

After three governments got involved, permission was finally given for Ariana, the Afghan line (49% owned by Pan American World Airways) to fly the engine over the Hindu Kush, a high mountain range, to Tashkent, in Central Asia. This was done and it is most certainly the only time a non-Russian airplane has landed in the Soviet city of Tashkent within memory, and especially an airline with high U.S. ownership. The crew was Indian but the Russians wouldn't let the Indians leave the airport. They stayed overnight at the field. But the Air India engine finally got to Moscow on an Aeroflot freighter.

Worse luck yet, after changing engines with minimum of facilities at Moscow, the Air India Super Connie took off again and lost another engine. This time an engine was brought in from Copenhagen by SAS. The Air India plane was out of service approximately a month, a heavy loss. But that's part of the tough job of flying into the Soviet Union. It's different.

# Italy's Air Plan

## Civil aviation to be made independent of defense

The Italian Government is seriously considering a proposal to take responsibility for civil aviation affairs away from the Air Force and the Defense Ministry and vest it with a new government civil aviation agency, Senator Giuseppi Caron said in Washington earlier this month. Senator Caron returned to Italy in mid-December after a ten-day visit to the U.S.

While in America, Senator Caron discussed proposed changes in the U.S.-Italian civil air bilateral agreement, participated in ceremonies opening Alitalia's new headquarters at 666 Fifth Avenue in New York, and visited jet manufacturers on the West Coast. He told AMERICAN AVIATION in an exclusive interview that his visit, while relatively brief, was very productive.

"In Italy the main problem confronting civil aviation interests is the fact that there is no specific government ministry or agency responsible for private flying and commercial air transport affairs," Senator Caron said.

"Under the idea now being studied, a civil aviation agency would be set up —perhaps not with the rank of ministry at first—in the government. To this agency would be transferred all of the nonmilitary aviation responsibilities of the Ministry of Defense except air traffic control.

"Military aircraft are in the minority in Italy, and civil air traffic will continue to be the major job of the airport control tower operators and other controllers, but the military have the trained personnel, the equipment and the facilities for this work," Senator Caron said. "Civil aviation will have a voice in air traffic control under the new plan, but the military will continue responsible for policies and operations."

Senator Caron, who was elected to the Italian Senate from the Venice district, is very strongly pro-civil-aviation and is obviously in favor of the new plan. A recent collision between a British European Airway's Viscount and an Italian jet led to considerable criticism of Italian air traffic controls, and the dispute has also raised questions about the efficiency of Italian weather forecasting facilities and radio guidance and landing aids.

While Senator Caron did not mention his particular incident, he did indicate that the Italian government was not satisfied with the minor departmental status now accorded civil aviation. "Railroads, shipping and highways are all strongly supported by the government," he said. "Aviation is in a less favored position and it is hoped that government support of civil aviation will compare more favorably with that of shipping, which has enabled the Italian Line to achieve the status of the world's second major passenger shipping company on the North Atlantic."

**Senator Giuseppi Caron**

"By improving the status of aviation, Italy's aircraft manufacturing industry would be benefitted, and the interest of the private flyer—now much neglected —would be better served. This move would also benefit commercial transport aviation in many ways. Italy's airports need improvement, most notably the new Fiumicino airport at Rome, and Malpensa at Milan. Both of these should have 12,000-ft. runways to accommodate international jet flights. The other airports should be equipped with the latest in air traffic and safety facilities for continental service."

Asked about his visit to the U.S., Senator Caron said Alitalia—controlled through majority stock ownership by the Italian government—is interested in medium-range jets to complement its large DC-8s, the first of which will be delivered in February of 1960, and he was pleased to be able to talk to manufacturing representatives on the Coast. Senator Caron declined to comment about his discussions with the State Department, but from other sources it was learned that additional traffic rights in the U.S. had been informally agreed upon and a later meeting will be held to draft the necessary amendments. At present, Italy has rights at Boston and New York.

# Jet Borrowing Mounts

## First round nearing end, but carriers will need more

The enormous financing programs required to support the purchase of fleets of jet airliners sent four major carriers to finance houses this month to negotiate loans and sales of stock issues to raise the funds. All in all Eastern, National, Delta and Northwest made arrangements that ran their obligations to banking and insurances into further millions of dollars.

**Northwest Airlines,** early in the month, offered common stockholders rights to buy 457,873 shares of 5¼% cumulative convertible preferred $25 par stock. Under the offering, holders of record December 8 received rights to one share of preferred for each three shares of common stock held. A group headed by the First Boston Corp. made arrangements to purchase any unsubscribed shares after close of business December 22, 1958.

**Eastern Air Lines,** which negotiated a $90-million long-term loan agreement in 1955 with Equitable Life Assurance Society, arranged with Prudential Life Insurance Co. a further $25 million in subordinated convertible debentures, dated December 15, 1958. Eastern also arranged a $50-million bank credit through a group of banks headed by Chase Manhattan. Interest rates were set at a minimum of 3½% to 4½%, but at a prime commercial rate.

**Delta Air Lines** concluded an agreement for long-term and short-term financing that will provide $30 million of new jet transport money. The company is to get $25 million in long-term money at 6% from a group of insurance companies headed by Prudential and $35 million in short-term bank loans.

The Delta financing came shortly after **National Airlines** had announced that loans had been worked out with Chemical Corn Exchange Bank and First National City Bank for $40 million in jet money. The carrier will repay the funds over 6½ years at an interest rate ¼% higher than the prime rate, with a maximum of 5¼%. Payments are set on a schedule that starts in 1961.

The current rash of loans pushes the total into many millions of dollars and in most cases will see the airlines through the first round of purchases. There remains, however, a substantial balance.

# CAB's Final Decision on the 7-States Case

Final opinion and order has been issued by the Civil Aeronautics Board in the Seven States Case (A/A, June 2, p. 55). For the first time since the Board began issuing preliminary "press release" reports of its decisions, the final order differed: (1) A Sioux Falls-Omaha route went to North Central and not Ozark Airlines; (2) A Sioux Falls and Waterloo route, via Spencer, Estherville and Mason City, Iowa, to Ozark was canceled; (3) A Kansas City-Quad Cities route to Ozark was extended into Chicago.

## Decision Details

### Routes After New Awards

**Frontier Airlines**

**Bismarck-Casper-Denver**
Bismarck-Mandan, N.D., Dickinson, N.D., Lemmon, S.D., Rapid City, S.D. (a) beyond Rapid City to Casper, Wyo. via Newcastle, Wyo. (b) beyond Rapid City to Denver via Hot Springs, S.D., Chardon, Alliance, and Scottsbluff, Nebr., Cheyenne, Wyo. to Denver (segment 10). Bismarck-Rapid City and Rapid City-Casper extension for five years, Rapid City-Denver. Permanent.

**Southern Nebraska**
Denver to Omaha via Sterling, Colo., Sidney, Imperial, McCook, Kearney, Hastings, and Lincoln, Nebr. (segment 11). For five years.

**Central Nebraska**
Lincoln, Grand Island and North Platte, Nebr. (a) beyond North Platte to Denver via Sidney, Nebr. and Cheyenne, and (b) to Denver via the Alliance and Scottsbuff, Nebr. segment (segment 12). Permanent.

**Northern Nebraska**
Casper, Wyo., to Omaha via Douglas and Lusk, Wyo., Chadron, Valentine, Ainsworth, Norfolk, Columbus and Lincoln, Nebr. (segment 13). For five years.

**Omaha-Kansas City**
Omaha to Kansas City via Lincoln and Beatrice, Nebr. and St. Joseph, Mo. (segment 14). Permanent.

**Williston-Bismarck**
Minot, N.D. added as alternate intermediate point with Dickinson on Billings and Bismarck-Mandan segment (segment 9). For five years.

**North Central Airlines**

**Milwaukee-Twin Cities**
Minneapolis/St. Paul to Milwaukee via Eau Claire, Marshfield and Appleton, Wis. (segment 10). Permanent.

**Dakotas-Twin Cities-Omaha**
Omaha to Sioux Falls via Norfolk, Nebr., Sioux City, Iowa, and Yankton, S.D. and (a) beyond Sioux Falls to Mitchell and Huron, S.D., and (a1) beyond Huron to Minot, N.D. via Aberdeen, S.D. and Bismarck-Mandan, N.D., and (a2) beyond Huron to Minneapolis/St. Paul via Watertown, S.D., and (b) beyond Sioux Falls to the terminal Grand Forks, N.D. via Brookings and Watertown, S.D. and Fargo, N.D. (segment 11). Permanent. Condition: Each Omaha-Minneapolis/St. Paul trip must serve a minimum of one intermediate.

**Sioux Falls-Twin Cities**
Sioux Falls to Minneapolis/St. Paul via Worthington, Fairmont and Mankato, Minn. (segment 12). Permanent Condition: Each Sioux Falls-Minneapolis/St. Paul trip must serve at least one intermediate.

**Rapid City-Twin Cities**
Rapid City, S.D. to Minneapolis/St. Paul via Spearfish, Pierre, Mobridge, Aberdeen and Watertown, S.D. (segment 13). For five years. Condition: Each Rapid City-Minneapolis/St. Paul trip must serve at least one intermediate, except where Pierre, S.D. is served, North Central must serve two intermediates.

**Grand Forks-Minot**
Extension of Grand Forks-Minneapolis/-St. Paul route from Grand Forks to Minot via Devils Lake, N.D. (segment 8). Permanent.
Minot, N.D. to Minneapolis/St. Paul, Minn. (segment 8) modified to read via the intermediate points Devils Lake and Grand Forks, N.D., Thief River Falls, Bemidji and Brainerd, Minn. Also Ashland, Wis., now an intermediate between Ironwood, Mich., and Duluth/Superior (segment 1) for five years; and addition of Rockford, Ill. between Beloit-Janesville and Chicago (segment 5) for five years.

**Ozark Air Lines**

**Chicago-Sioux City-Omaha**
Omaha added as an alternate terminal point with Sioux City on Chicago-Sioux City segment. Route now is Chicago, Rockford, Ill., Dubuque, Waterloo, Mason City and Fort Dodge, Iowa and (a) beyond Fort Dodge, Iowa to Sioux City and (b) beyond Fort Dodge to Omaha (modification for segment 8). Permanent

**Sioux City-Chicago**
Extended Ozark's Des Moines-Chicago route beyond Des Moines to Sioux City. Route now is Sioux City, Des Moines, Ottumwa and Burlington, Iowa and Peoria, Ill., Chicago (modification of segment 9). Permanent.

**Quad Cities-Twin Cities**
Add Waterloos, Iowa on Quad Cities-Twin Cities route. Route now is Davenport/-Moline (Quad Cities), Cedar Rapids, Waterloo, Iowa, Rochester, Minn., Minneapolis/St. Paul (modification of seg. ment 10). Permanent.

**Des Moines-Twin Cities**
Des Moines to Minneapolis/St. Paul via Fort Dodge and Mason City, Iowa, Austin-Albert Lea and Rochester, Minn. (segment 11). Permanent.

**Des Moines-Chicago**
Des Moines to Chicago via Iowa City and Clinton, Iowa (segment 12). For five years.

**Des Moines-Milwaukee**
Des Moines to Milwaukee via Cedar Rapids and Dubuque, Iowa and Madison, Wis. (segment 13). For five years.

**St. Louis-Quincy**
St. Louis to Quincy, Ill.-Hannibal, Mo. (segment 14). For five years.

**Chicago-Kansas City**
Chicago to Kansas City via Davenport, Iowa-Moline, Ill. (Quad Cities), Burlington, Iowa, Kirksville and St. Joseph, Mo. (segment 15). For five years. Conditions: (1) On segments one through six at least two intermediates must be served between terminals whether the terminals are on the same or different segments, except Quincy-Hannibal is to be deemed an intermediate; (2) On trips over segments eight, nine, 11, 12, 13, and 15 at least one intermediate (exclusive of Des Moines, Waterloo or Rochester) must be served; (3) Flights which serve both Madison and Milwaukee, Wis., must also serve at least one of the following—Dubuque, Cedar Rapids or Des Moines, Iowa.

### Other Changes

**Braniff Airways**
Moline, Ill. suspended during the period Ozark is authorized to serve such point. Minot and Bismarck-Mandan, N.D., Aberdeen, Huron and Watertown, S.D., St. Joseph, Mo., Quincy, Ill., Mason City, Ottumwa and Burlington, Iowa, and that part of segment 2 of Route 48 between Sioux City and Des Moines, Iowa, terminated. Temporary authority to serve Lincoln, Nebr. was not renewed.

**Western Air Lines**
Spearfish, S.D. during the period North Central is authorized to serve the point. Scottsbluff, Alliance and Chadron, Nebr., Hot Springs and Brookings, S.D., Mankato and Rochester, Minn., terminated.

**United Air Lines**
Iowa City during the period Ozark is authorized to serve the point. North Platte, Scottsbluff and Grand Island, Nebr., on Route 1 terminated.

## Mohawk's New Base to Be a Money-Saver

A new $3-million maintenance and headquarters base now in full-scale operation by Mohawk Airlines is expected to save the local airline $182,471 a year. Here's how:

| | |
|---|---|
| Outside overhaul charges .. | $ 26,219 |
| Increased productivity .... | 105,878 |
| Reduced labor costs (6%) | 39,574 |
| Other labor savings ..... | 10,800 |
| | $182,471 |

Harnessed until now to a base at Ithaca, N.Y. that was designed to maintain a three-plane DC-3 fleet, Mohawk has shifted its center of operations to Utica and the new 139,000 sq. ft. facility.

The expansion, which will cost the local carrier $110,000 a year under a 25-year lease, will improve its operations in no fewer than a dozen areas, according to vice president, operations Carl Benscoter.

Two new 120 by 300 ft. hangars, for example, will permit Mohawk to house 14 Convairs, move them in and out of maintenance or overhaul without disturbing others in the shop. Under extreme conditions at Ithaca, the carrier had to move aircraft as many as four times before completion.

With the increased productivity that will result and the benefits of a new methods and standards program, the airline will save $105,878 annually.

And by permitting Mohawk to handle overhaul work previously let to outside contractors, the base will save another $26,219 a year. In past operations at Ithaca, because of space limitations, Mohawk could realize only about 30% utilization of a $12,000 Convair work dock purchased from American Airlines.

With all shops completed and fully equipped at Utica, Mohawk will be able to overhaul all accessories and aircraft components with the exception of R1820 and R2800 engines. Although Benscoter feels Mohawk's present engine volume doesn't warrant its own engine shop, he is studying such an installation for the future.

For now, the airline sets some kind of a record in ground shipment of its R1820s—1,607 road miles from Utica to Dallas, Tex. for overhaul by Dallas Airmotive. Airwork overhauls the R2800s.

As part of its program to equip the new base, Mohawk has invested some $49,800 in key maintenance equipment, a healthy sum for a local.

In addition to the $12,000 maintenance dock, the list includes a $10,500 Clark fork lift; two Motor Generator power units at $2,500; a $6,000 varidrive for the accessory shop built by United Manufacturing Corp.; and a $7,500 Clark Y80 tow tractor.

Also on the list are an airless spray system produced by Nordson Corp. and priced at $2,700; an $800 line maintenance work dock purchased from United Air Lines; a $2,100 Magnaflux machine; a $2,200 Ingersoll-Rand air compressor and $1,500 Clarke-O-Matic floor scrubbing machine.

## CAB Report and Forecast

• **Holiday season has been a busy time at CAB.** Adding to the workload have been informal bilateral negotiations with the Italians, formal consultations with the Belgian and carrier-by-carrier conferences over the upcoming traffic conference of the International Air Transport Association.

The CAB members went on record a few months ago opposing a fare differential for jets, but a number of influential foreign carriers, as well as a majority of U.S. airlines who fly international, are convinced that some sort of additional fare for jet service is warranted. Decision will be made at the IATA meeting, now scheduled for January in Paris—but the decision must still be approved by the CAB insofar as it affects jet service to U.S. points.

• **New route awards have been a big headache** to the CAB staff, which must be certain that the final order and decision gives adequate consideration to each and every possible traffic point. If this is neglected, a Federal Court can often be persuaded to order the CAB to take another look at the case. Seven States case (see facing page) is an example of months of hard work on the part of the Board staff. Final decision, which gave consideration to every particular of the case, ran to nearly 200 single-spaced typewritten pages.

• **Other significant Board actions** of recent days include a decision to investigate the temporary intermediate points served by four more local service airlines: Continental, Bonanza, Lake Central and North Central. Earlier this month the Board refused to reconsider its awards in the St. Louis-Southeast case. Most of the carriers' request for reconsideration revolved about the Board's decision to award the St. Louis-Florida route to TWA. This award, the Board said, "does not preclude a later grant of applications in the Southern Transcontinental Case."

• **Board line-up will continue unchanged** during the coming year. The President earlier this month redesignated Jim Durfee as chairman for another year and Chan Gurney as vice chairman. Durfee has served on the CAB since April 1956. Gurney has served since March, 1951, and next year begins a new six-year term.

• **Present holiday traffic will test the wisdom** of a mid-month decision to allow three supplemental carriers to operate extra flights between New York and Miami and New York and Los Angeles to take care of an expected rush of holiday travelers. But the Board's more generous treatment of the supplementals was more than matched by its new get-tough policy towards the all-cargo carriers.

• **Board shorties**—Contention by the CAB enforcement office that Company Mexicana de Aviacion has no authority to fly its new Los Angeles-Acapulco service is indignantly denied by the carrier . . . turns out the CAB was delegated authority back in 1952 to develop plans for the War Air Service Pattern (WASP) and not much has happened since; the lack of planning could result in a national scandal if war came.

## Summary of U.S. Airline Traffic for August 1958 vs. August 1957

*Compiled by American Aviation Publications from Official CAB Data*

| | Revenue Passengers (In Thousands) | | | Revenue Passenger Miles (In Thousands) | | | Total Ton-Miles Rev. Traffic | | | % Available Ton-Miles Used | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1958 | 1957 | % Change | 1958 | 1957 | % Change | 1958 | 1957 | % Change | 1958. | 1957 |
| **DOMESTIC** | | | | | | | | | | | |
| American | 641 | 672 | — 4.6 | 473,271 | 472,660 | 0.1 | 57,165,220 | 55,247,328 | 3.5 | 60.9 | 58.6 |
| Braniff | 165 | 172 | — 4.1 | 75,305 | 76,937 | — 2.1 | 8,389,498 | 8,244,984 | 1.8 | 48.5 | 48.5 |
| Capital | 346 | 375 | — 7.7 | 136,735 | 141,832 | — 3.6 | 14,329,943 | 14,803,053 | — 3.2 | 48.4 | 47.9 |
| Continental | 84 | 82 | 2.4 | 46,255 | 40,203 | 15.1 | 4,808,587 | 4,173,969 | 15.2 | 53.5 | 48.0 |
| Delta | 225 | 233 | — 3.4 | 111,699 | 113,983 | — 2.0 | 12,583,672 | 12,343,841 | 1.9 | 53.8 | 56.6 |
| Eastern | 658 | 666 | — 1.2 | 358,308 | 356,632 | 0.5 | 37,191,738 | 36,899,840 | 0.8 | 53.4 | 53.5 |
| National | 118 | 113 | 4.4 | 68,893 | 69,643 | — 1.1 | 7,359,372 | 7,477,403 | — 1.6 | 43.9 | 52.3 |
| Northeast | 106 | 104 | 1.9 | 34,820 | 29,172 | 19.4 | 3,535,272 | 2,911,088 | 21.4 | 38.6 | 46.2 |
| Northwest | 154 | 143 | 7.7 | 124,025 | 104,204 | 19.0 | 13,591,432 | 11,471,939 | 18.5 | 55.4 | 56.7 |
| Trans World | 423 | 444 | — 4.7 | 397,802 | 394,281 | 0.9 | 42,509,189 | 41,480,228 | 2.5 | 64.0 | 61.6 |
| United | 631 | 613 | 2.9 | 495,009 | 484,843 | 2.1 | 57,242,360 | 55,180,066 | 3.7 | 60.2 | 60.2 |
| Western | 126 | 133 | — 5.3 | 69,950 | 69,721 | 0.3 | 7,304,533 | 7,277,100 | 0.4 | 46.5 | 59.2 |
| **TOTALS** | **3,677** | **3,750** | **—1.9** | **2,392,072** | **2,354,111** | **1.6** | **266,010,816** | **257,510,039** | **3.3** | **55.4** | **56.8** |
| **TERRITORIAL** | | | | | | | | | | | |
| Caribair | 25 | 21 | 19.0 | 1,710 | 1,507 | 13.5 | 183,242 | 162,530 | 12.7 | 71.3 | 62.3 |
| Hawaiian | 56 | 56 | .... | 15,839 | 8,498 | 86.4 | 1,543,204 | 816,290 | 89.1 | 69.7 | 60.2 |
| Trans Pacific | 25 | 20 | 25.0 | 3,373 | 3,996 | —15.6 | 278,638 | 320,729 | —13.1 | 62.2 | 64.0 |
| **TOTALS** | **106** | **97** | **9.3** | **20,922** | **14,001** | **49.4** | **2,005,084** | **1,299,549** | **54.3** | **68.7** | **62.1** |
| **INTERNATIONAL** | | | | | | | | | | | |
| American | 13 | 13 | .... | 12,627 | 10,014 | 26.1 | 1,575,996 | 1,360,801 | 15.8 | 63.3 | 65.9 |
| Braniff | 5 | 4 | 25.0 | 8,660 | 9,203 | — 5.9 | 1,052,301 | 1,105,398 | — 4.8 | 48.4 | 50.4 |
| Delta | 6 | 7 | — 14.3 | 6,795 | 8,194 | —17.1 | 799,810 | 961,328 | —16.8 | 50.3 | 61.4 |
| Eastern, Overseas | 43 | 34 | 26.5 | 60,520 | 43,536 | 39.0 | 6,417,740 | 4,628,078 | 38.7 | 65.6 | 67.2 |
| San Juan | 31 | 26 | 19.2 | 47,853 | 37,041 | 29.2 | 5,047,733 | 3,954,497 | 27.6 | 70.5 | 68.1 |
| Bermuda | 8 | 5 | 60.0 | 6,097 | 4,073 | 49.7 | 628,241 | 424,064 | 48.1 | 51.2 | 68.3 |
| Mexico | 4 | 3 | 33.3 | 6,570 | 2,422 | 171.3 | 741,766 | 249,517 | 197.3 | 53.2 | 55.9 |
| National | 11 | 6 | 83.3 | 7,224 | 4,456 | 62.1 | 826,012 | 511,598 | 61.5 | 61.4 | 47.8 |
| Northwest | 17 | 14 | 21.4 | 37,386 | 29,605 | 26.3 | 5,990,176 | 4,737,968 | 26.4 | 73.8 | 73.8 |
| Hawaiian | 2 | 1 | 100.0 | 5,686 | 3,727 | 52.6 | 627,429 | 413,144 | 51.9 | 73.8 | 66.8 |
| Panagra | 10 | 12 | — 16.7 | 13,311 | 14,936 | —10.9 | 1,965,528 | 2,082,643 | — 5.6 | 54.0 | 59.0 |
| Pan American, System | 287 | 283 | 1.4 | 423,300 | 420,461 | 0.7 | 54,194,615 | 52,464,362 | 3.3 | 67.7 | 65.3 |
| Latin America | 120 | 119 | 0.8 | 129,280 | 127,654 | 1.3 | 16,738,612 | 16,494,271 | 1.5 | 68.1 | 66.5 |
| Atlantic | 135 | 123 | 9.8 | 192,621 | 164,708 | 16.9 | 23,833,252 | 20,308,284 | 17.4 | 64.5 | 63.4 |
| Pacific | 26 | 31 | — 16.1 | 94,878 | 117,076 | —18.9 | 12,765,291 | 14,206,098 | —10.1 | 74.7 | 72.0 |
| PDX/SEA-HON. | 1 | 2 | —100.0 | 4,196 | 5,389 | —22.1 | 478,188 | 599,395 | —20.2 | 52.2 | 55.7 |
| Alaska | 6 | 10 | — 40.0 | 6,521 | 11,013 | —40.8 | 857,460 | 1,455,709 | —41.1 | 63.0 | 59.7 |
| Trans Caribbean | 8 | .... | .... | 17,443 | .... | .... | 1,620,805 | .... | .... | 87.3 | .... |
| Trans World | 37 | 34 | 8.8 | 109,322 | 91,125 | 20.0 | 12,973,825 | 10,906,851 | 18.9 | 62.0 | 63.7 |
| United | 13 | 14 | — 7.1 | 32,264 | 33,683 | — 4.2 | 3,534,993 | 3,610,301 | — 2.1 | 73.4 | 77.8 |
| Western | 2 | 1 | 100.0 | 2,481 | 2,284 | 8.6 | 274,288 | 252,614 | 8.6 | 48.6 | 51.0 |
| **TOTALS** | **452** | **422** | **7.1** | **731,333** | **667,487** | **9.6** | **91,226,089** | **82,621,934** | **10.4** | **66.4** | **66.1** |
| **LOCAL SERVICE** | | | | | | | | | | | |
| Allegheny | 48 | 47 | 2.1 | 8,526 | 8,273 | 3.1 | 869,077 | 836,291 | 3.9 | 49.6 | 47.7 |
| Bonanza | 15 | 14 | 7.1 | 3,530 | 2,985 | 18.3 | 356,562 | 298,148 | 19.6 | 43.2 | 43.8 |
| Central | 13 | 13 | .... | 2,491 | 2,546 | — 2.2 | 257,544 | 260,211 | — 1.0 | 31.6 | 34.1 |
| Frontier | 21 | 23 | — 8.7 | 5,267 | 5,993 | —12.1 | 598,679 | 672,560 | —11.0 | 56.8 | 72.0 |
| Lake Central | 16 | 16 | .... | 2,508 | 2,471 | 1.5 | 260,274 | 256,818 | 1.3 | 43.3 | 41.3 |
| Mohawk | 39 | 40 | — 2.5 | 8,000 | 7,793 | 2.7 | 802,103 | 793,429 | 1.1 | 50.1 | 46.7 |
| North Central | 73 | 68 | 7.3 | 12,867 | 11,290 | 14.0 | 1,286,101 | 1,145,797 | 12.2 | 51.6 | 51.0 |
| Ozark | 37 | 41 | — 9.7 | 6,227 | 6,711 | — 7.2 | 649,529 | 691,467 | — 6.1 | 48.9 | 46.5 |
| Pacific | 35 | 34 | 2.9 | 7,627 | 7,286 | 4.7 | 754,787 | 717,018 | 5.3 | 51.5 | 59.6 |
| Piedmont | 38 | 40 | — 5.0 | 8,022 | 8,652 | — 7.3 | 812,224 | 871,064 | — 6.8 | 56.0 | 68.7 |
| Southern | 19 | 20 | — 5.0 | 3,401 | 3,721 | — 8.6 | 355,547 | 378,763 | — 6.1 | 39.2 | 41.0 |
| Trans-Texas | 21 | 22 | — 4.5 | 4,657 | 4,960 | — 6.1 | 500,638 | 523,633 | — 4.4 | 39.9 | 41.4 |
| West Coast | 24 | 26 | — 7.7 | 4,366 | 4,599 | — 5.1 | 443,784 | 453,422 | — 2.1 | 51.4 | 51.9 |
| **TOTALS** | **399** | **404** | **—1.2** | **77,489** | **77,280** | **0.3** | **7,946,849** | **7,898,621** | **0.6** | **48.4** | **49.8** |
| **HELICOPTER SERVICE** | | | | | | | | | | | |
| Chicago | 11 | 7 | 57.8 | 218 | 115 | 89.6 | 22,031 | 13,110 | 68.0 | 29.3 | 29.2 |
| Los Angeles | 3 | 3 | .... | 127 | 124 | 2.4 | 18,203 | 17,949 | 1.4 | 64.4 | 66.8 |
| New York | 11 | 7 | 57.1 | 209 | 130 | 60.8 | 22,769 | 16,056 | 41.8 | 48.9 | 46.7 |
| **TOTALS** | **25** | **17** | **47.1** | **554** | **369** | **50.1** | **63,003** | **47,115** | **33.7** | **48.4** | **48.2** |
| **ALASKAN** | | | | | | | | | | | |
| Alaska | 8 | 7 | 14.3 | 4,740 | 2,808 | 68.8 | 852,730 | 719,030 | 18.6 | 48.4 | 45.0 |
| Alaska Coastal | 8 | 8 | .... | 681 | 647 | 5.3 | 78,022 | 78,547 | — 0.7 | 65.6 | 69.7 |
| Cordova | 2 | 2 | .... | 332 | 558 | —40.5 | 63,456 | 241,562 | —73.7 | 65.1 | 53.0 |
| Ellis | 7 | 8 | — 12.5 | 457 | 454 | 0.7 | 51,238 | 52,505 | — 2.4 | 75.1 | 66.6 |
| Nor. Consolidated | 3 | 3 | .... | 1,001 | 904 | 10.7 | 214,101 | 200,870 | 6.6 | 68.2 | 66.9 |
| Pacific Northern | 16 | 15 | 6.7 | 16,082 | 15,868 | 1.3 | 2,189,175 | 2,123,081 | 3.1 | 73.2 | 70.1 |
| Reeve | 2 | 1 | 100.0 | 1,513 | 1,044 | 44.9 | 324,922 | 169,420 | 91.8 | 65.4 | 53.7 |
| Wien | 7 | 5 | 40.0 | 2,309 | 1,631 | 41.6 | 580,082 | 541,226 | 7.2 | 66.6 | 65.1 |
| **TOTALS** | **53** | **49** | **8.2** | **27,115** | **23,914** | **13.4** | **4,353,726** | **4,126,241** | **5.5** | **64.8** | **61.3** |

## WEST COAST TALK

By Fred S. Hunter

Lockheed Air Terminal is in a state of flux.

Its use as an airline alternate when weather shuts down Los Angeles International has been an important revenue source. But jets will begin operating at Los Angeles in 1959. And the cost of expanding the field merely for provisional jet use would be prohibitive.

Nevertheless, President Louis Wulfekuhler is forecasting 1959 revenues will be at about the same level as 1958—with costs only a little higher.

LAT still gets the supplemental carrier trade in this area. And this might even increase if these carriers are able to hold the fares at the old levels. (At their peak, the nonscheds took $64 million out of the pockets of the airlines in a 2½-yr. period at Lockheed Air Terminal alone. But they are now "playing it legal" and will make no such inroads these days.)

There is also a possibility that jet traffic congestion at Los Angeles International might one day lead a carrier to transfer a piston schedule or so across town—but this remains only a possibility.

So with jet operations looming ahead, Lockheed Air Terminal's Management has a sales and engineering department seeking means for greater diversification.

Lockheed Air Terminal designed and built the experimental Aerobridge, which United Air Lines is testing at O'Hare Field. It has also developed a monorail-suspended forward-loading and unloading cab that American Airlines plans to use initially for second-level jet passenger loading at San Francisco International Airport. But both of these two items have now been transferred to Lockheed's Georgia Division at Marietta for sales and manufacture. Marietta is equipped for fabrication and production; Lockheed Air Terminal isn't. There's also a differential of about $2,000 in freight rates on an Aerobridge to Eastern airport locations.

Lockheed Air Terminal has an airport-management contract at Palmdale, a consulting contract with the Hawaiian Aeronautical Commission, a refueling contract with Shell Oil Co. at Honolulu and one or two others. These are the types of outside services it will pursue to meet the changing picture.

• **Fighter or transport?**—When the Douglas Aircraft Co. set up three separate corporate systems engineering sections: one for transport aircraft, another for combat aircraft and a third for missiles, one of the first decisions it had to make was whether its AEW&C (airborne early warning and control) design proposal to the Air Force should be classified as a transport or combat aircraft. Arthur E. Raymond, senior vice president of engineering, handed the responsibility to E. F. Burton, vice president of transport systems. AEW&C missions count as combat missions, but the Douglas entry in the Air Force competition is a conversion of the DC-7 to turboprop power, with a saucer-like radome and a cabin full of electronic gear, and Raymond decided that made it a transport.

• **New British fan**—Both Boeing and Douglas are reported showing great interest in a new Rolls-Royce turbofan engine, now running on the test stand. It is the RB-141, rated at 16,000 lbs. thrust, and reports say Rolls-Royce is investing £17 million of its own money in the development of the engine.

• **Honeycombed stainless' future**—The cost of brazed honeycomb-cored stainless steel is coming down—its price is about half the $1,000 per sq. ft. of three years ago. And, a substantial future user will be North American Aviation which has specified the material for external surfaces of the B-70. But as Rohr Aircraft's president, J. E. Rheim, points out, the full extent of its usage will depend on defense budget allocations. Rohr, incidentally, has one of the industry's largest facilities for producing the stuff.

• **West Coast briefs**—Changes in crew scheduling will be showing up with new turbine equipment. Faster Lockheed Electra makes Miami-New York a one-day roundtrip for Miami-based Eastern Air Lines' crews, with no New York layover.

Ryan Aeronautical Co. is scheduled to deliver the prototype afterburner for the General Electric J85 jet engine in January.

## THE BULLETIN BOARD

**Undisplayed Advertising:** $2.00 per line, minimum charge $6.00. Cash with order. Estimate 30 capital letters and spaces per line; 40 lower-case letters and spaces per line. Add two lines if Box Number is included in lieu of advertiser's name and address.

**Displayed Advertising:** $20.00 per column inch. Space units up to full pages accepted in this section for classified-type advertising.

**Forms close** three weeks preceding date of issue. Address all correspondence to: Classified Advertising Department, American Aviation Publications, 1001 Vermont Ave., N.W., Washington 5, D.C.



### Help Wanted

**Airline Director of Industrial Relations.** Experienced in personnel work and labor relations. Furnish complete resume and late picture to G. Robert Henry, Executive Vice President, Bonanza Air Line, Inc., P. O. Box 391, Las Vegas, Nevada.

## AD INDEX

Wayne W. Parrish

# Hitting the High Spots . . . A Few Were Overlooked

Last winter Ethel Whitaker, secretary of the National Air Taxi Conference, called to say some of the boys were in town for a committee meeting and invited me over to lunch.

As often happens the conversation got around to the old days in the business and I learned about two books which had escaped my notice. K. V. Brugh, Jr., who runs the Greensboro-High Point Air Service, Inc., Greensboro, N.C., told me about "The Ford Story" and was good enough to send me a copy. Let me recommend it heartily if you have an interest in early aviation. It's a well-illustrated book by William F. Larkins on the history of the Ford Tri-Motor, published in 1957 by the Robert R. Longo Co., 1318 Beaumont Drive, Wichita, Kan. Price $84.95.

There are a few Ford Tri-motors still flying, a couple by the Island Air Service, Put-in-Bay, Ohio; a couple by the Johnson Flying Service at Missoula, Mont., and a half-dozen others here and there. Might even be some left in Central or South America but Mr. Larkins, who is no mean historian and researcher, didn't turn any up. Fascinating part of aviation history, this early multi-engined machine. Developed by the late Bill Stout, financed by the Fords, and did much to launch the era of commercial air transport.

Clayton Lemon, who runs Virginia Airmotive at Woodrum Field, Roanoke, told about "Old Soggy No 1," the uninhibited story of Slats Rodgers, a fabulous Texas character if one ever existed. The book was edited by Hart Stilwell and published in 1954 by Julian Messner, Inc., New York, but may be out of print. Don't remember how I got my copy; I think George Haddaway of *Flight* magazine dug up one for me, but the book is priceless and I'm indebted to Clayton for letting me know about it.

Don't know whether Slats is still around. He was running a fishing camp down on the Rio Grande when the story in the book ended, but you who got into aviation since World War II probably won't believe all the things this guy got into. Bootlegging, barnstorming, smuggling, plus crawling away from 28 crashes. He violated every regulation that ever existed. He was the bane of the CAA and the earlier Bureau of Air Commerce. A real Texas-type getting into one scrape after another, flying by the seat of his pants (and often a bottle of hootch), fights, stunts, in and out of jail, a simply incredible series of episodes that only those who knew the old barnstorming days can believe and understand. Yet he helped, in his cockeyed way, to get the business going.

## Odds and Ends

**Did you know** that there is a company doing nothing but munafacturing travel accessories? It's called the Trav Company, Inc., 911 Washington Ave., St. Louis 1, Mo. Among the products are the TRAV packets for laundering your nylon and dacron clothing articles, the Wash-n-Dri packets, a hanger case, nylon clothlines, and other items for the lightweight air traveler.

**In my hobby** of collecting airports, I made great progress in 1958, even got down to where I had only 39 airports served by scheduled airlines to hit to complete the country. That was in September. But about 25 new ones will be opened up by spring, mostly in the north central states. An inventory is impossible at this time. In any case I keep making a net gain each year.

**An eight-week trip** starting late September took me to Poland, a second visit to the Soviet Union, thence to Afghanistan, India, Nepal and Turkey. I'll be starting a series about this trip on this page shortly.

**If you haven't** been to Puerto Rico in recent years you won't recognize the place. I hadn't been there for quite a spell until I flew down to be master of ceremonies at the Airport Operators Council last May. The San Juan Intercontinental Hotel, near the big new airport, is first class in every way. Jack Smith (Continental Air Lines) and I drove out one day to see El Yunque, the tropical rain forest which gets 200 inches of rain a year. Nice drive, but the rental car was a convertible and the top wouldn't stay down above 40 m.p.h. We almost took off once when the top flew back. On several occasions I went to the excellent Swiss Chalet restaurant, and on one night had *fondue borguignonne* with Ed Bishop and Tom Oster of Delta and Capt. Dick Horton of Eastern and his wife. You cook your own bits of beef in boiling oil and season to your own liking . . . a very excellent dish. Lots of good spots now in San Juan—Puerto Rico is on the big upswing. Tried out Pan Am's new service nonstop into Baltimore; it had been launched only a few weeks before but every seat sold. I had a hard time wangling a coach seat.

**Restaurants I remember:** on the east side of Paris near the Gare de l'Est, a modest but truly French place called Nicolas, 12 Rue de la Fidelité, a fine dinner with super service with AAP's Jean-Marie Riche . . . and the Restaurant Florence, 23 Rue de Ponthieu, Champs Elysées . . . and here is a very excellent rose wine: Coteaux du Sancerrois Pinot Rose.

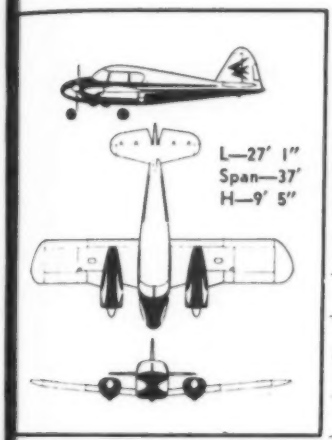
**When I was writing** my series on Australia, I forgot to mention one of the neatest promotional tricks any airline could possibly have. Of course most airlines couldn't do this because not many airline customers are still using Chic Sales, or outhouses, or privies—choose your own name. But Connellan Airways of Alice Springs serves a vast outback area in central and northern Australia, mostly ranching country, and modern plumbing is pretty scarce. Also, because of infrequent schedules and difficult communications, the airline customers have to know all the intricacies of contacting the airline.

Connellan has printed up a 17-page description, complete with schedules, traffic information, rates, credit arrangements, etc., and packs batches of these booklets between covers entitled "What You Can Do With Your Air Service," bores a hole through the upper left hand corner with instruction, "Please insert string and hang in public library," and has thus provided the most useful combination reading material and toilet paper in Australia, if not the world. Certainly as good as a Sears Roebuck catalog. Everybody on the system who can read knows all the airline's rules and regulations.

**TAKEOFFS ON *Aviation Daily*, one of the American Aviation publications, are fairly frequent. They're called *Aviation Dilly*. At the 8th annual Airline Interline Sales Conference held in Honolulu last September, a *Dilly* made its appearance. Here are four airline men holding copies. Left to right, Leroy Peterson of Alaska Airlines, John F Heiner of Hawaiian Airlines, H. G. "Red" MacKenzie of American Airlines, and Bob Desmond of United Air Lines.**

# —FOR MORE INFORMATION—

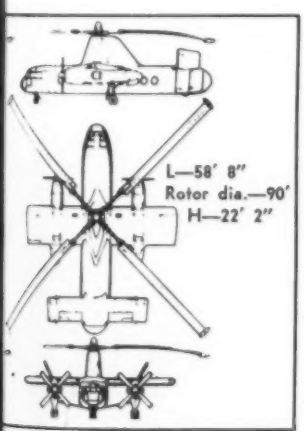
**USE THE ATTACHED REPLY CARDS** for additional information about any product or service advertised or reported in this issue of AMERICAN AVIATION. Circle the numbers on the card that correspond with numbers appearing beneath items described. Requests will be forwarded to the companies concerned. No additional postage required.




## PIPER PA-23 APACHE

TYPE: 4-5 place, twin-engine business airplane. WEIGHTS: empty—2,230 lbs.; gross—3,800 lbs. POWERPLANTS: (2) Lycoming O-320-B2; max. rating—160 hp. PERFORMANCE: max. speed—183 mph; cruise speed, 75% power at 7,000′—171 mph; initial rate of climb—1,260 fpm; range—1,260 mi.; take-off distance—1,190′; landing distance—750′. MFR: Piper Aircraft Corp., Lockhaven, Pa.

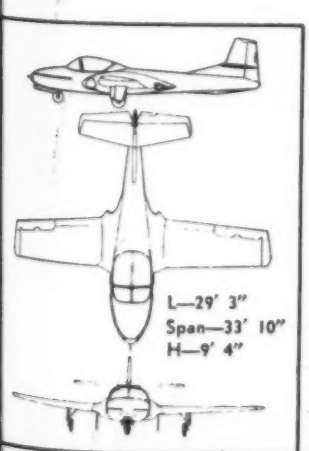
NOTES (for your personal use):




## FAIREY ROTODYNE

TYPE: 40-48 passenger, twin-engine, tip-jet-powered commercial helicopter. WEIGHTS: empty—23,400 lbs.; gross—39,000 lbs. POWERPLANTS: (2) Napier Eland N.El.7 turboprops and Fairey rotor-tip pressure jets; rating—3,500 shp. PERFORMANCE: cruise speed—185 mph; range with max. payload—260 mi. MFR: The Fairey Aviation Co., Ltd., Hayes, Middlesex, England.

NOTES (for your personal use):




## CESSNA T-37A (USAF)

TYPE: 2-place, twin-jet trainer. WEIGHTS: empty—3,890 lbs.; gross—6,403 lbs. POWERPLANTS: (2) Continental J69-T9s; rating—920 lbs. st. each. PERFORMANCE: high speed level flight at 35,000′ (military power ½ fuel)—337 kts; cruise speed same conditions—292 kts; Range cruise at 35,000′ at 268 kts with reserves—708 n.mi. MFR: Cessna Aircraft Co., Wichita, Kan.

NOTES (for your personal use):




AMERICAN AVIATION READER SERVICE CARD

Dec. 29, 1958

Expires thirty days after above date.

Circle numbers below for information on products, literature advertisements. Please limit requests to ten items.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | |
| 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | |
| 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | |
| 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | |
| 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | |
| 99 | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | |
| 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | |

name _____

title _____

employer _____

address _____

city _____ zone ____ state _____

For quicker processing please give information requested below

Please check the one category that best describes your business or occupation:

- ☐ Aircraft Manufacturer
- ☐ Engine Manufacturer
- ☐ Ground Support Mft.
- ☐ Aircraft Syst., Comp. and Mat. Mfr.
- ☐ U.S. Scheduled Air Carrier
- ☐ U.S. Cargo, Supp. Air Carrier
- ☐ Foreign Air Carrier
- ☐ Bus., Ind. Aircrft. Operator
- ☐ Terminal Airport
- ☐ Fixed Base Ops., Maint., Repair, Overhaul and Dis.
- ☐ U.S. Mil. Com. Officer
- ☐ U.S. Mil. Non-Com. Officer
- ☐ U.S. Mil. Civ. Supvr.
- ☐ U.S. Civil Govt.
- ☐ State and Municipal Govt.
- ☐ Foreign Govt. (Mil. and Civil)
- ☐ Aviation Consulting Firm
- ☐ Aviation Org. and Assn.
- ☐ Educational Institution

Please indicate your primary responsibility:

- ☐ Administrative/Financial
- ☐ Design/Engineering
- ☐ Production
- ☐ Operations/Maint/Ovrhl
- ☐ Purchasing/Sales
- ☐ Other _____

( ) I am (am not) now receiving my personal copy of AMERICAN AVIATION

FIRST CLASS
Permit No. 2455-R
(Sec. 510 P. L. & R.)
Washington, D.C.

BUSINESS REPLY CARD

No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY

**AMERICAN AVIATION**
1001 Vermont Avenue, N.W.
Washington 5, D.C.

# Aircraft Data Cards

Aircraft selected for the Data Cards in this issue of AMERICAN AVIATION are Piper's PA-23 Apache, Fairey's Rotodyne and Cessna's T-37A. Piper's PA-23 Apache is one of the several popular light twins available to the business flying market. The 1959 Apache features better soundproofing, a redesigned instrument panel and new exhaust augmenters. Fairey's Rotodyne, which made its first flight earlier this year, is a VTOL aircraft which has tip-jet driven rotor blades for takeoff and landing. For normal flight it is a combination of autogiro and fixed wing aircraft. Cessna's T-37A, twin-jet primary trainer is being produced in quantity for the USAF.

## PIPER PA-23 APACHE




Aircraft Data Card
December 29, 1958



## FAIREY ROTODYNE



Aircraft Data Card
December 29, 1958



## CESSNA T-37A (USAF)



Aircraft Data Card



FIRST CLASS
Permit No. 2455-R
(Sec. 510 P. L. & R.)
Washington, D.C.

BUSINESS REPLY CARD

No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY

**AMERICAN AVIATION**
1001 Vermont Avenue, N.W.
Washington 5, D.C.

UNITED AIR LINES

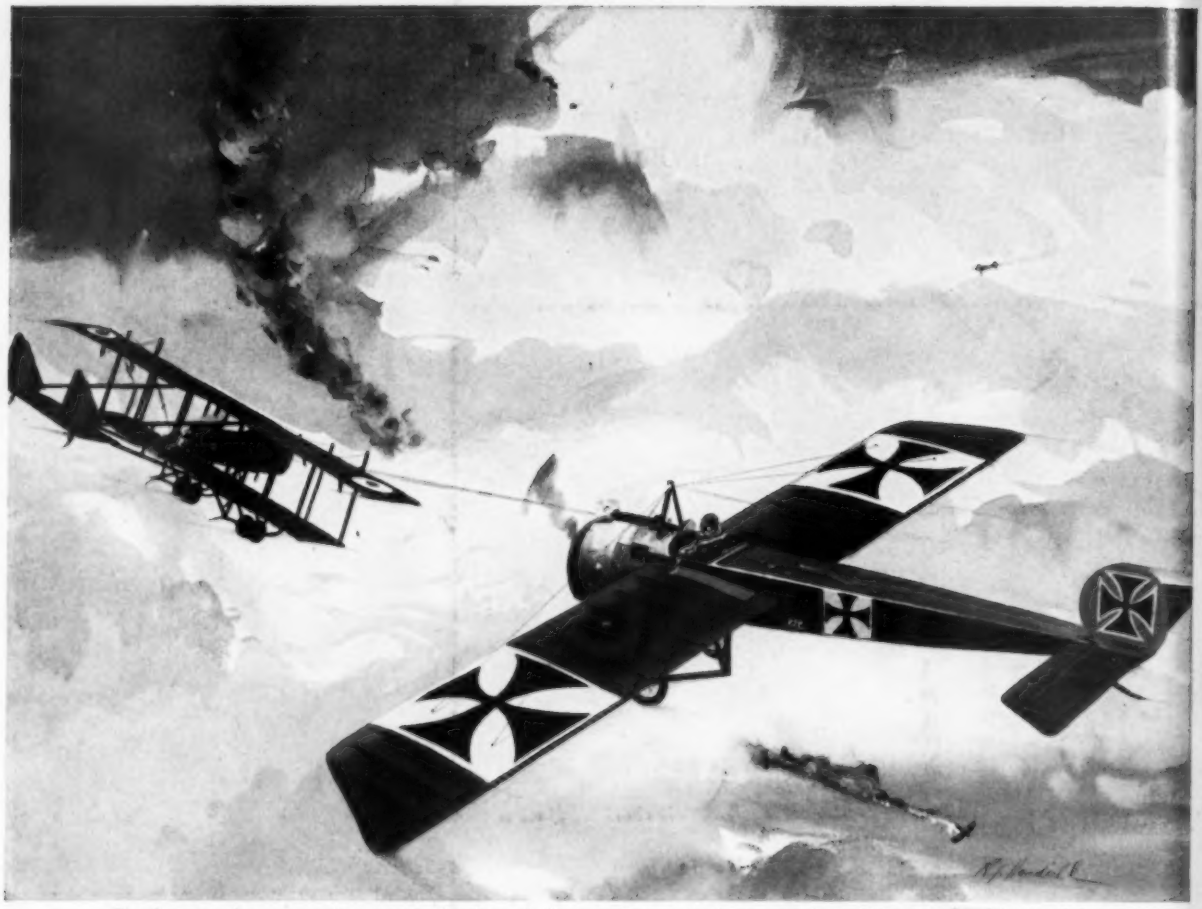
# KEEPING MAINLINERS JUST LIKE NEW

Extra care in maintenance keeps United Air Lines Mainliners flying with fine-watch dependability. Latest improvements are added during regular progressive overhaul at United's vast Maintenance Base—a policy that made United the first coast-to-coast airline with radar on every plane. In operation, every Mainliner® is tuned to perfection before and after every flight. And, ready for tomorrow, United is completing multi-million dollar maintenance facilities—biggest in the industry—for the new Douglas DC-8 Jet Mainliners. This is another kind of extra care enjoyed at the regular fare on United Air Lines.

***IT COSTS NO MORE FOR EXTRA CARE ON UNITED, THE RADAR AIRLINE***




Circle No. 10 on Reader Service Card.



The first use of a gun synchronized to fire through the propeller . . . by Lieutenant Oswald Boelcke in a Fokker E-1

# *Early War Birds*— THE FOKKER E-1

This plane, designed by Anthony Fokker, was rejected by Dutch, English, French and Russian military prior to World War I. Germany on the other hand, received Fokker's "Eindekker" enthusiastically, designated it the E-I, and thereby acquired the services of this original and brilliant Dutch designer throughout the war. The E-I, powered with an 80 h.p. rotary engine, had a top speed of 80 m.p.h. at 6,000 feet. While its airframe was not strong enough to withstand a prolonged power dive and its engine was cranky and inefficient, it was still one of the better single-seaters when the fighting began.

In February, 1915, the Germans asked Fokker to equip his plane with a machine gun that would shoot through its revolving propeller similar to a French plane that they had just captured. The French used steel plates on the propeller to deflect any of the bullets that might strike the whirling blades. Fokker rejected their method as impractical, and in 48 hours had equipped an E-I with the first truly synchronized gun.

Oswald Boelcke (later to become one of Germany's greatest aces and earliest proponent of squadron flying) flew the trial mission and easily claimed the first victim for the synchronized gun. The fighter plane or "flying gun platform" had come into being. For the next four months Germany dominated the skies. Then the Allies learned the secret from a captured plane. Soon both sides were armed with synchronized guns, and the dog fighting began in earnest.